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ROYAL COLLEGE OF
DENTAL SURGEONS OF ONTARIO.

THE

MONTHLY REVIEW

OF

DENTAL SURGERY.

VOL. II.

JUNE, 1873, TO MAY, 1874.

LONDON:
PUBLISHED FOR THE PROPRIETORS BY
SMITH, ELDER, & CO., WATERLOO PLACE.

MDCCCLXXIV.

LONDON:
M'GOWAN AND CO. (LIMITED), STEAM PRINTING WORKS,
GREAT WINDMILL STREET, W.

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THE MONTHLY REVIEW
OF
DENTAL SURGERY.

No. I. JUNE, 1873. Vol. II.

DENTAL BENEVOLENT FUND.

Although the number of dental practitioners is steadily increasing all over the country, and the social position of its individual members is improving year by year, we still occasionally hear of those who, from sickness or other causes, fail in their profession, and arrive at a condition little short of destitution. To a man who has honestly striven to maintain himself by his own exertions, nothing can be more galling than to be compelled to apply to various members of the profession for pecuniary assistance; and yet, unless he has private friends, able and willing to help, this is, in many cases, what it must come to.

We hardly think this necessity should be allowed to continue. The members of our profession are yearly increasing their material prosperity, and the number of successful practitioners is steadily becoming larger; but with all this, no organization exists for the purpose of forming a "Benevolent Fund," and we, who complacently regard ourselves as members of one of the "liberal professions," have hitherto made no systematic provision for helping those who (probably without any fault of their own) may have "fallen upon evil times." The necessity of such an organization is self-evident. The duty of those who have been prosperous in their career is equally manifest, and the readiness to respond to an appeal for help in the formation of a "Dental Benevolent Fund" we do not for a moment doubt.

It is just one of those things that everybody waits for everybody else to commence. We will willingly take our share in the promotion of an object that is certainly so much needed, and which, if once started, will assuredly be liberally supported. With a view, however, to bringing the movement to a practical bearing, we shall be glad to receive communications from those who sympathize in the step, so that a meeting may be called, and the feeling of the profession thoroughly ascertained.

THE DENTAL HOSPITAL OF LONDON.

To the Editor of the Monthly Review of Dental Surgery.

Sir,—As one of the oldest friends, and only survivor of the original Trustees of the Dental Hospital, I cannot but feel a warm interest in its welfare, and cannot be unaffected by criticisms on its work and management. In an article in your last issue, characterized by candour and fairness towards all concerned, you remark, with some dissatisfaction, that the institution is supported in far too large proportion by our own profession, and you proceed to show that "one-fifth of the annual subscriptions, and one-fourth of the donations of Life Governors, come from that source." I believe, Sir, you might go further, and show that what aid we do obtain from the public is given as a matter of favour and personal obligation to ourselves. That this should not be so, is agreed on all hands, and it behoves us to inquire into the cause of such a state of things. And I believe it is not far to seek. It is not, I feel convinced, simply because we do not figure more frequently in the advertising columns of The Times, though I have always been an advocate of that practice to any extent short of absolute loss, lest the public might come at length to forget our very existence; but it is that the Dental Hospital has never yet attained an adequate development, and the public are slow to bring their offerings to an institution on an inadequate scale, placed in an obscure situation, and the importance of whose work and mission is not at once and conspicuously self-evident. We may know, by a sort of esoteric knowledge, that it is, in a quiet and unostentatious way, accomplishing a great amount of useful work, both in aid of suffering humanity and as a great educational institution; but this does not proclaim itself and make itself felt by the outside world, and until we have the means of doing this, it will be a vain expectation to look for support to that source. And this must be done by ourselves, who alone know the need and how it may be supplied; and it must be done well and thoroughly, and in no grudging spirit, and then we shall have no cause to complain of the absence of that encouragement and support which are accorded to other philanthropic schemes. It is in vain to expect that the public will initiate such an institution; but if the efforts now being made to place the Dental Hospital before the world on an adequate and satisfactory scale are supplemented by those who are conscious of a zeal for the honour and advancement of their profession, we need have no fear for the result. As a school, it is impossible to overestimate its importance; for the position in which our profession is to be held socially must depend on the character of the men from whom its ranks are to be recruited; and this again is dependent on the reputation of the school. So that, in whatever way we view the matter, and apart from the satisfaction afforded by aiding in a good work, it is clearly our interest, if we feel any honest pride in our calling, to respond liberally and cheerfully to the appeal now about to be made in this behalf. With apologies for having occupied so much of your valuable space, allow me to subscribe myself,

Yours, very truly, Edwin Saunders.

THE ELEMENTS OF GOLD FILLING.

By Mordaunt Stevens, M.R.C.S., L.D.S., M.D., D.D.S., Rue de Luxembourg, Paris, late House-Surgeon, Dental Hospital, London, Dental Surgeon to the 8th Arrondissement, Paris, &c.

(Continued from vol. i., p. 547.)

CAPPING EXPOSED NERVES.*

We will now direct our attention to those cases where exposure of the nerve exists, classing them under three heads:—1stly. Healthy Exposed Nerves. 2ndly. Diseased Nerves. 3rdly. Dead Nerves. We will first consider how best to treat healthy exposed nerves. Sometimes, whilst removing the decay, or shaping the cavity, we find blood oozing through a minute aperture; we have exposed the nerve. What should we do? Fill the tooth with gold, as if no such complication existed? Destroy the nerve, or cap it? I certainly prefer the last resource; at any rate, I think no man is justified in destroying a healthy nerve, although I certainly do not side with those who assert that they can save all exposed nerves. Perhaps the best course open to us is to lay the case before our patients, explaining in a few words the *pour et contre* of the matter,—telling them that, on the one hand, if the nerve be removed, the tooth will lose one of its main sources of vitality, to say nothing of its natural brilliancy; on the other, the patient must clearly be made to understand that we cannot guarantee invariable success. Very few operators *cap* exposed nerves in the same manner. Some place a layer of blotting-paper dipped in carbolic acid over the pulp, filling the cavity with some osteo-plastic. Others use the osteo-plastic alone. Little caps of gold were much lauded in the olden time, and many authorities still speak highly of this system. Some practitioners, after painting the exposed surface of the pulp, fill immediately with Hill's or Jacob's. The method I prefer is to paint the nerve with gutta-percha and chloroform, then cap with lead foil, filling at once with soft gold, taking care not to press on the exposed portion of the pulp. The operator will do well, when the gold is burnished, to paint it before removing the dam with some more dissolved gutta-percha.

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* These chapters being specially devoted to gold filling, it would be impossible for me to discuss the merits of the different drugs, ranging from carbolic acid to pepsine paste, used for the treatment of diseased nerves.

If pain ensue after the insertion of the filling, the gum had better be painted with equal parts of aconite and chloroform. If this brings no relief, one or two leeches should be applied on the gum, over the root of the tooth affected. A saline purgative may also be prescribed with advantage. Should the inflammation continue notwithstanding these palliative measures, the only remedy is to destroy the pulp. To accomplish this object, we may either remove the filling and apply arsenic to the nerve, or drill down on it through the enamel for the same purpose. If we decide on the latter method, we should perforate the tooth in such a manner *as to give us readiest access to the nerve*, so as to make the operations of extracting the nerve and filling the root comparatively easy.*

So much for *healthy* exposed nerves. We will now devote a moment's attention to inflamed and suppurating nerves. Some authorities believe in trying to save *all diseased* pulps whilst a spark of vitality remains in them. Others destroy them unmercifully. I must reluctantly confess to siding with the latter, although I was once an infatuated believer in the more conservative doctrine. A series of experiments which I made whilst occupying the post of House-Surgeon to the Dental Hospital of London, has discouraged me a great deal in my attempt at saving inflamed and suppurating nerves. Many of my pet cases, after living for some months, came suddenly to an untimely end, when all fear of a failure had left my mind. I therefore extract all diseased nerves now, unless I am working for a particularly intelligent patient, who fully understands what is being done for him. Arsenious acid is used by most of us for the destruction of nerves. Some employ it alone, others use it in combination with other drugs added to palliate the pain caused by the arsenic. I generally employ the well known nerve paste, composed as follows:—

---

* I purposely say nothing of the now justly discarded operation of rhizodontrophy.

℞ Arsen. Acid. gr. xx.
Morph. Sulph. gr. xl.
Acid. Tann. gr. xl.
Creasotis, ♏ xl.
Ol. Car. ♏ iv.
Misce bene.

A small pellet of cotton dipped in this paste is placed on the pulp, and covered over with mastic and cotton. On the patient's next visit, if the nerve be not entirely dead, a second dose is applied. When the nerve is dead, it should be entirely removed with a barbed nerve extractor, the nerve cavity being then filled for a few days with cotton and creosote, capped with mastic. We will, in the next chapter, discuss the best methods of treating *dead* teeth and filling nerve cavities.

(To be continued.)

TWO CASES ILLUSTRATING THE HIDDEN DANGERS OF ANÆSTHESIA.

By W. J. Barkas, M.R.C.S.E., L.R.C.P. Lond.

It ought to be considered the duty of every one in the medical and dental professions to lay before their brethren an account of all cases that are not exactly common, but are sufficiently so as to render any of us liable to meet with similar ones. The two cases to which I shall draw attention are not in themselves of much interest, and often occur, I dare say, in practice; but the warning they hold out to us of the danger there may be in the administration of the nitrous-oxide gas, chloroform, or any other anæsthetic, is positively alarming—dangers that it would be impossible to detect before-hand, no matter what precautions were taken, or of which the symptoms were so slight as to be really no danger-signals.

The first case was that of a young gentleman, about twenty-one years of age, well-built, and to all appearance in splendid health. There were no signs of heart-disease, nor any affection of the lungs. His family history is also good. He came to me for the purpose of having a left upper first molar extracted, the nerve pulp of which was exposed, and had been so for two or three months. He told me that the last time he had a tooth extracted he fainted, so I thought it better to perform the operation without the gas. Immediately after the tooth was extracted, he exclaimed that he was going to faint. His face and lips (which normally were very high-coloured) became ashy-white, and the heart's action very slow and feeble, the pulse being felt with great difficulty; the breathing was very slow, but regular and quiet; he never totally lost consciousness. I caused him to inhale the vapour of Spirit. Ammon. Arom., and gave him two 30 minims doses of that drug, having first laid him down on a couch. He remained in this state of syncope for about a quarter of an hour, and then gradually the stimulating effect of the ammonia made itself evident.

The second case was a young relative of my own, a youth about fifteen years old, rather stout, but very muscular, apparently in good health; no heart or lung affection; has had occasional epileptic attacks during excessive bursts of laughter or crying, but did not have one when a tooth was extracted last year. He is very backward with his teeth, not having cut his upper second molars, and is at present just cutting his left lower first molar. It being necessary to extract his left upper first molar, I did so, but without gas. In about one minute after the operation, while still sitting in the chair expectorating the blood (which was pretty considerable), he went off into a severe epileptic fit. I instantly laid him on his right side on the floor, in order that the blood might flow out of his mouth, and not down the trachea, and dashed cold water plentifully over him. He remained in the fit about two minutes, and was greatly exhausted for about half an hour afterwards.

In these two cases there were no apparent reasons why the gas should not have been given, for the mere facts of the first case having had a fainting fit once before, and of the other having had fits at very long intervals, were not sufficient reasons against its administration if it had been urgently asked for. Yet if the gas had been administered, who can say what the *finale* would have been?

Of course these accidents might occur in the practices of persons who had never received a medical education, and what the result in that case would be it would not be difficult to say, for I judge it to be impossible for a person to remain cool in similar circumstances, when he is ignorant of the nature of the complaint and of the proper remedies to be used.

DISSECTING ALVEOLAR ABSCESS.

From Notes by S. J. HUTCHINSON, L.D.S.

UNDER this title may be described a simple though instructive case, occurring in the out-patient practice of University College Hospital.

A young woman, about twenty-five years old, presented herself with a swelling on the hard palate, about two inches long and three-quarters wide, limited behind by the palato-maxillary suture, and extending forwards to about the apex of the lateral incisor root, and mesially by the maxillary suture.

Fluctuation being very evident, a free incision was made at the posterior extremity, which, rather curiously, was the most distended and depending, a free discharge of pus followed, and on a probe being passed into the opening, there was distinct evidence of bare bone, showing that the periosteum had been stripped from the palatine process of the left superior maxillary bone.

A week afterwards the opening made had entirely healed. On this occasion it was noticed that the root of the left superior lateral was all that remained of the tooth, and was in a necrosed condition, though not loose, but almost black. The patient was directed to attend Mr. Ibbetson's practice, when the root was removed, and on her next visit, three days afterwards, the swelling was greatly reduced, though the natural conformation of the parts was not quite restored.

THE PNEUMATIC SYRINGE AND ITS HAND-PIECE.

By Warwick Hele, L.D.S., Carlisle.

The value of the syringe as an accessory to the dentist's cabinet has been so thoroughly appreciated, that many forms of the instrument have been invented especially adapted for the purposes of dental surgery. Hitherto the ordinary ball syringe, fitted with a check-valve and a fine nozzle, and the india-rubber dental syringe of the American Hard-Rubber Company, have maintained the foremost place in public esteem. For the general purposes of dental surgery, either of these answer sufficiently well to justify the popularity they have obtained; but, with the Morrison engine in daily use, the practitioner soon perceives that something more is now required. The great speed of the burr or cutter, when driven for the excision of crucial caries, or any decay removed with similar difficulty, causes a perceptible rise in the temperature of the tooth operated upon. This, besides producing great discomfort to the patient, is of manifest injury to the burr or cutter. Moreover, the fine dust, worked free by the cutter, rapidly collects within the cavity, and, on the slightest accession of salivary moisture, is converted into a viscid paste, which not only prevents the accurate placement of the burr or cutter, by obscuring observation, but also tends to the destruction of the cutting edges through choking the instrument. Thus it appears that frequent cleansing of the tooth by the patient rinsing the mouth is necessary, or otherwise the passage of water over the cutter during its application. To the first, it is objected that loss of time occurs; to the second, that, with the ordinary syringe in use (either the ball or piston), the passage of water is too unequally controlled and the left hand occupied by it, instead of the management of the patient's tongue and cheek.

The syringe required must be of such a form as to give, first, a supply of water only limited by the amount of cleansing needed during the excision; that is, its capacity should be great enough to give the operator a supply of water throughout the excision without need of replenishing. Second, the power of injection should, like the supply, be unlimited, and need no attention. Third, the water should be supplied by it at a uniform blood temperature. Fourth, the application of the stream should be so contrived as to leave the operator's left hand unencumbered, and so under control that, whilst flooding of the mouth be avoided, yet sufficient water should be injected for cleansing the cutter and keeping down the temperature. Fifth, when desirable, as on the termination of excision, it should be able to supply the instantaneous passage of a jet sufficiently powerful to drive all *débris* out of the tooth.

It is evident that a syringe contrived so as to give these as the results of its use would be of the utmost value to the dentist, not only as an assistant to the Morrison engine, but also in the many other ways whenever a syringe is employed.

In the pneumatic syringe and its hand-piece I have obtained a combination of appliances which give the required results.

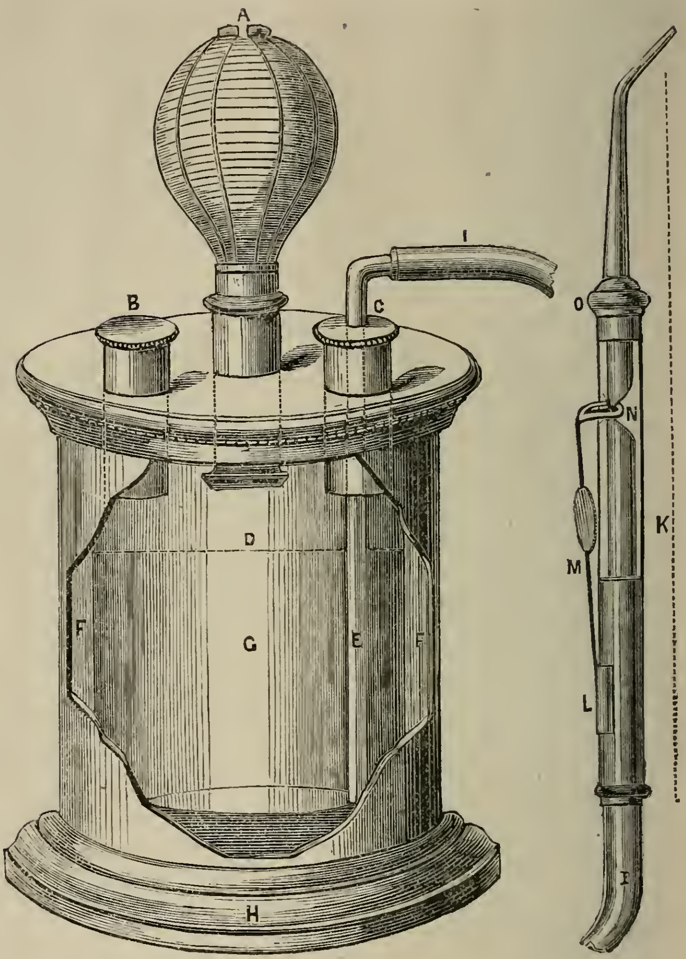
Reference to the diagrams will make it at once apparent that the principle of its construction is an extension of that involved in the manufacture of the injecting bottle, which has already partly displaced the syringe used for the injection of tissues preliminary to microscopic examination. The hand-piece is altogether a novelty.

It had been my intention to produce another form of apparatus, but this recommended itself by its simplicity, freedom from leakage, and the ease with which the principle may be applied to an enema apparatus or feeding syringe.

The pneumatic syringe will be seen to consist of two cylinders, an outer and an inner. Between the two cylinders are placed close layers of felt, for the retention of an equable temperature within the latter. The outer cylinder is fitted with a heavy bottom ring, for the sake of steadying the apparatus upon the table, or below the Morrison engine.

The cover of the outer cylinder has three tubes passing through it, these tubes are soldered into the cover of the inner cylinder, through which they open, thus connecting the outer and inner cylinders, but sufficient space is left between the covers for the felt packing. Every care is taken to procure sound joints between the tubes and the inner cylinder. Each tube being fitted with a screw-cap and rubber-washer, the whole, when closed, leaves the apparatus absolutely air-tight.

Of the three tubes, the one marked in the diagram B is fitted with the screw-cap and washer only, and is used for the introduction of water into the inner cylinder. The tube marked C has its screw-cap pierced for the reception of the delivery tube E, which is of a small diameter, and passes directly to the bottom of the inner cylinder. The remaining tube is for the reception of the condensing arrangement, which is as follows:—The elastic ball of an ordinary syringe is taken and freed of its tube and nozzle; in their place the ball is fitted with a new tube, of such a diameter as to allow of its being screwed through the tube of the cylinders



A	Air-hole of condensing ball.
B	Tube fitted with screw cover for introducing water.
C	Tube fitted with screw cover for holding delivery tube.
D	Valve of condensing ball.
E	Delivery tube proceeding to the bottom of inner cylinder.
F	Felt packing between the cylinders for retaining temperature.
G	Inner cylinder for holding water ; the level is indicated by a line.
H	Stand weighted for steadiness.
I	India-rubber tubing, of any length required, to connect syringe and hand-piece.
K	Hand-piece through which the India-rubber tubing proceeds.
L	Fine tube secured on hand-piece for retaining the choke-spring.
M	The choke-spring, fitted with button for finger counter-pressure.
N	Portion of outside of hand-piece removed to show action of choke-spring.
O	The nozzle secured by collar and screw so as to grasp the free end of India-rubber tube.

[N.B.—In the drawing, a portion of the outer cylinder and one-half of the inner are removed to show the interior, and arrangement of the pipes and valves.]

provided for its reception. It terminates, without diminishing its diameter, some way within the inner cylinder. The free extremity is turned off plain, *i.e.*, the screw-thread is abolished; at about one-eighth of an inch from its termination a fine circular groove is cut; its end is a true flat, but pierced by a minute hole running quite up into the air-ball; over this hole is stretched a slip of oiled silk, the silk being secured in position by a ligature fastening it, and held by the aforesaid groove. The ball externally at its apex is pierced by a minute hole. The ball, the tube, and its terminal valve together form the condenser.

The delivery tube E, on escaping from the outer cylinder, is secured to the hand-piece by means of india-rubber tubing of small diameter, such, in fact, as that attached to a baby's feeding-bottle, and may be of any length.

The hand-piece, M, consists of a $\frac{5}{16}$th tube, three inches in length, through which the india-rubber tubing proceeds. On the top side of the hand-piece the choke-spring is secured by means of a fine tube, into which one end slips. The choke-spring is of considerable power, about $1\frac{6}{8}$ inch in length, and terminates in a loop at right angles with itself. This loop enters through a slot within the hand-piece on depression of the spring, and the india-rubber tubing within the hand-piece is traced through the loop when so situated. The free end of the india-rubber tubing is carried on to the base of the nozzle, to which it is fastened by a spring-split collar. This collar has a screw cut thereon, and by means of this screw the nozzle is firmly braced into the hand-piece.

The action of the pneumatic syringe and the use of the hand-piece will at once be understood. Water of about 100°, or a rather higher temperature (so as to allow for its cooling during the passage of the long delivery tube), being poured in at B, up to the line indicated, and the screw-cap replaced, the elastic air-ball is grasped between the first and second fingers near its base, at the insertion into the outer cylinder; the thumb being upon the apex covering the air-hole A, and the ball then compressed, its contained air is forced into the inner cylinder, through the valve, D, which, rising, checks the escape of any of the condensed air. This operation having been repeated until no more air can be forced in, the hand-piece is either attached to that of the Morrison engine, leaving the button on the choke-spring external, so as to be below the thumb, or is otherwise held by the left hand, as the handle of a speculum would be, into which the hand-piece may easily be converted. The gentlest pressure upon the choke-spring causes the escape of a drop of water, driven forward by the condensed air within the inner cylinder, through the contraction of the india-rubber tubing being partly liberated; this is regulated by additional pressure to a larger quantity; so that, with the greatest ease to the operator, water of the required temperature and direction, and at needed pressure and volume, from a drop per second to a powerful jet, is passed, and that without displacing his instruments or hands from the mouth of the patient. The course of the water is immediately arrested by removing the finger pressure from the choke-spring.

The sketch represents a convenient size of the apparatus, but it is as well to made the Pneumatic Syringe of half a pint capacity; for by fitting the cover of the inner cylinder with a screw collar, it would then become an admirable enema apparatus, or answer instead of a feeding syringe.

Beyond the advantages already pointed out, the pneumatic syringe and hand-piece possess the additional one of being so simple in construction as to be easily made in one's own workshop.

THE SURGERY OF THE MOUTH.

By Francis Mason, Esq., F.R.C.S., Assistant-Surgeon and Lecturer on Anatomy at St. Thomas's Hospital.

(Continued from vol. i., p. 412.)

Simple Hypertrophy of the Gums.

The gums, like any other part of the body, are subject to hypertrophy, that is a mere enlargement of the normal tissue. This condition is, however, by no means commonly met with. There is little, if any, pain attending the affection. It is supposed to be incidental to the period of childhood, and is said to be associated with the process of dentition. There are four cases of much interest recorded, and to which the reader is referred. One by Mr. Waterman (Boston Medical and Surgical Journal, 1869, page 167); a second by Mr. Heath ('Injuries and Diseases of the Jaws,' 1868, page 189); a third by Mr. Pollock (Holmes's 'System of Surgery,' 1870, vol. iv., page 342); and a fourth by Mr. Gross (Gross's 'System of Surgery,' 1862, page 535). These cases are specially remarkable on account of the extent of surface involved. I have not met with such severe examples; but I have seen three well-marked instances of general hypertrophy of the gums. The growth stood out from the alveolar margin for nearly half an inch, and more prominently at some parts than in others. In two of these cases I sliced off a piece of the hypertrophied part, in order to ascertain the character of the growth; and under the microscope there was seen an abundance of fibrous tissue, with glandular substance, covered by highly vascular and very long papillæ. The growth was painless and tough, and the enlarged papillæ were evident to the naked eye. In these cases operative interference was not entertained, inasmuch as the progress of growth was almost imperceptible; indeed, excepting for the somewhat unsightly appearance, there was no special discomfort. Two of the patients were about twelve years of age, the other was about twenty.

It is difficult to account for this condition, but no doubt it arises from some constitutional cause. It is well known that the skin sympathizes intimately with the intestinal mucous membrane, so that we need not be surprised to find that any irregularity of the one affects the other; further, it is not difficult to understand that the gums, covered as they are by the same continuous structure, might participate in any disturbance of the *primæ viæ.* Whatever be the cause, the principal feature of the disease is, that it is comparatively painless. In all the cases on record the greater bulk of the growth proceeded from the upper jaw, the principal enlargement being in front of the canine and incisor teeth of the upper jaw, and in the region of the molar teeth on each side in the lower jaw. This peculiar disposition of the hypertrophied part is consistent with the arrangement I noticed in the cases above referred to.

Spongy Gums.

Spongy gums, unlike hypertrophy, are generally attended with more or less, and often with a good deal of pain. Many persons, especially dyspeptic patients, are subject to periodical attacks of slight inflammation of the part, and under such circumstances a purgative and alterative course of treatment should be adopted. This condition may be occasioned by certain medicines, as mercury, or by the fumes of phosphorus, or by an inordinate amount of tartar collected around the teeth. It is generally amenable to tonic treatment—dilute nitric acid, with bark or ferruginous preparations. In certain examples, but rarely, the disease runs on to a kind of "diffuse alveolar suppuration." (See MONTHLY REVIEW OF DENTAL SURGERY, vol. i., No. 9, p. 412.) When there is much congestion, a free scarification gives great relief. As a local remedy, the following lotion may be employed three times a day:—

℞ Tinct. Myrrhæ, ℥ss.
Inf. Rosæ comp. ad ℥8.
M. ft. lotio.

Polypus of the Gums.

This is an enlargement of a small portion of the gum, with a narrow neck. It is commonly found in connexion with the incisors or the canine teeth, and seems to depend upon the accumulation of tartar, and general neglect of the dental apparatus. In the *treatment*, any source of irritation, as the ragged edge of a tooth, should be filed away, or even the removal of the tooth may be necessary. The teeth should be thoroughly cleared of the tartar, and scrupulous care should be taken to prevent its re-accumulation. I have recently had a case under my care, in which I removed the growth with a scalpel, and applied strong nitric acid to the cut surface with the best result; and this practice, combined with the extraction of the carious tooth, effects a permanent cure.

Vascular Tumours of the Gums.

In October, 1872, a man, aged thirty-two, applied at St. Thomas's Hospital with a nævoid-looking growth on the upper jaw, near the left canine tooth. It was about the size of a small filbert, and with pressure some of its contents could be expressed, so that the tumour could be diminished in size. He had noticed it four years previously as a small swelling. It remained about the same size until two months ago, when he received a blow on this part, since which it has rather rapidly increased. I punctured it, and nothing but blood came away. The hæmorrhage was free. From the position of the tumour, the application of a ligature was impracticable; so subsequently I removed it completely with the knife. This was readily effected, and there was scarcely any bleeding, either at the time or after the operation. The growth seemed to be easily enucleated. An examination under the microscope proved it to be made up of an aggregation of blood-vessels, having a tortuous and sacculated appearance.

The most frequent position of these growths is the canine or the incisor teeth of the upper jaw. Various local applications have been recommended, such as the actual cautery, the strong nitric acid, and other escharotics, or tannic acid, perchloride of iron, and other astringents; but the most effectual, and certainly the most expeditious method of getting rid of such growths, is the use of the knife, with, if necessary, the application of the actual cautery.

Warty Growths of the Gums.

These are not often met with, but they are occasionally seen, sometimes in connexion with a similar growth on either the soft palate or the uvula. Three such examples have been under my observation. The growths are made of delicate fibrous tissue, having a soft covering of epithelium. Mr. Salter has seen "a profusion of small warts on the gums, associated with warts on the lips and about the face." (Holmes's 'Surgery,' vol. iv., p. 347.)

The *treatment* is simple, although it appears that in some instances there is a tendency to recurrence. The cases in which I operated were permanently cured after a single removal with the knife, and touching the part immediately afterwards with nitrate of silver.

Difficult Eruption of Wisdom Teeth.

It would be out of place to dwell at length on this part of our subject, as it so essentially belongs to the department of dental surgery, but it is introduced here with the view of directing the reader's attention to an occasional error in diagnosis. It frequently happens that an adult patient applies to the surgeon for what he describes as a "sore throat." He has considerable difficulty in opening his mouth, and complains of great pain in deglutition. Pressure at the angle of the jaw is insupportable. He has, perhaps, had several restless nights, and, indeed, to an inexperienced person, he has all the symptoms of either a quinsy or a bad ulcerated throat. In such cases, it is of the highest importance to examine the wisdom tooth of the affected side, for in all probability that may be the origin and cause of the inflammatory mischief. If such be the case (and one meets with numberless examples of this condition in a minor degree), the mere separation of the sides of the overlapping gum with either scissors or with a knife will generally suffice to render the patient completely comfortable. The question of removing the tooth is one that I forbear to discuss, but I feel sure that the simple method just described is well worthy of a trial before the more serious measure is resorted to. A brisk purgative, followed by tonic medicines, with local fomentations of poppy-heads, frequently applied, will complete the treatment. It is needless to add, that the patient will derive much benefit from being placed under the most favourable hygienic influences.

(To be continued.)

ERUPTION OF THE TEETH.

By. Herr Robert Baume.

(Vierteljahrsschrift.)

(Continued from vol. i., p. 558.)

If the alveoli of the permanent teeth be examined at the time of the eruption, when a tooth is already somewhat pressed forward beyond the edge of the alveolus, it may be seen that the former space of the alveolus has sensibly decreased. The tooth, which formerly lay in a roomy socket, is now pretty closely enclosed in the bony mass of the alveolus. If the tooth has the greater portion of the crown through the gum, it will be found that it is tolerably loose and movable, for the alveolus is far too wide for the neck and fang, and must consequently be considerably narrowed by a rapid bony formation. If the tooth be removed in this state, the alveolus will be found lined with a soft reddish tissue, which, when seen microscopically, will be recognized as formative matter. By especial sounding there may be felt underneath, sometimes pretty plainly, a certain roughness of the bone, though this is not always the case. If these conditions be examined in macerated jaws, the alveolus will be found, quite contrary to rule, considerably roughened and porous, and broken through by many smaller and larger openings. The alveolus does not show so plainly the character of lamellæ, but points to the fact that here a very rapid development of bony tissue has taken place. The growth of bone is not in layers here as in periostal development; such an impression is by no means made by the examination of the construction of the rapidly developing tooth socket. The alveolus in places shows the form of the "spongiosa," which appear in spiculæ. This I find quite clearly in some jaws shortly before the commencement of the first dentition. For the new formation of bone in the alveolus no other source can be found than the fibrous tissue which lines the tooth socket. The microscopical observation of this texture shows, as I have already noticed, that the question is in an issuing fibrous texture with regard to granulation. The cells may be, in case of necessity, seen without the action of acid. After treatment with acid, however, the whole texture will be made remarkably clear, and there can plainly be seen numerous outlying round cells, with small dark nuclei. This texture is found not only *on* the alveolus, but also *in* the same, in all large pores, and in the remarkably widened Haversian canal, and through the latter into the pulp cavity. Finding this texture in the Haversian canal, inclines me to the assumption that the granulation has its origin in the pulp and the pulp-socket—an assumption which I shall subsequently be able to show more at length. To begin with, I maintain that the tooth, besides its fang covering,—at least, so far as this is ready,—is separated from its bony cavity by a layer of fibrous texture. Accordingly, the theory that the growing bone presses the tooth must fall through, as otherwise what purpose has the layer of fibrous texture? It is certainly not there to be squeezed between the bone and the tooth. A contusion must, however, take place if the two hard substances, tooth and bone, pressed against one another. I further observe that the fibrous texture must appear before the bone, and therefore is the commencement. The bony formation follows after the fibrous texture is formed in the place concerned. The view appears to me to be justified, that the granulation of the fibrous texture forces the tooth out of the alveolus, and first becomes bony later, when, through the forward pressure of the crown of the tooth, space is obtained. I shall now proceed to the stronger grounds for this supposition.

We can observe in many places a change in the position of the teeth, a forcing out of the alveoli to a greater or less extent, where it is well known that only the granulation of fibrous texture can have achieved this result. I call to mind here the appearance in inflammation of the fang covering. If growths appear in a part of the above-mentioned membrane, that is quite sufficient to force the tooth concerned, more or less out of the alveolus. If the alveolus out of which the tooth is gradually forced after the damage of its antagonist be examined, the granulation which covers the bone will be very plainly seen. In macerated jaws the process may be recognized by finding in place of a smooth surface a rough porous lamella. The lamella is pierced by a great number of large and small openings, which the fibrous texture made on its entrance into the alveolus. In those cases where a tooth is forced out of the alveolus after the loss of its antagonist, the exuberance of the fibrous texture of the fang covering is certainly not the guilty cause, for this membrane shows no increase of circumference; it can maintain its normal condition. In opposition to this, however, the alveolus, as far as the fang remains in, is entirely covered by granulation. Thus in this case, the only question can be, with respect to the fibrous texture pushing forward from the pulp, as the alveolus is narrowed by bony formation in proportion as the tooth is forced forward. The growth on the fang covering can lead either to a formation of cementum or to an exostosis of the fang; according to our present experience, it cannot lead to a new formation of bone in the alveolus. There remains, then, only the fibrous texture of the pulp for further observation. Upon these conditions I spoke in 1871, at the yearly meeting of the Central Society of German Dentists, and tried to make good my view that the granulation here referred to springs from the pulp substance. In all cases where the expulsion of a tooth or remaining fang ensues, may be found the fibrous tissue which pathological anatomy shows us to have its origin in the pulp. This tissue, which covers the alveolus during the eruption of the teeth, has probably (as before observed) proceeded from the pulp. The question now arises whether this tissue does not, *after* the forward movement of the tooth, receive an addition to its elementary texture, or whether it is not developed when "the crown of the tooth has already left its old place." Further, it is to be considered whether the increase of fibrous texture surrounding the tooth can gradually force it out of the jaw. It has already been mentioned that granulation in the same direction, whether from periostitis (for example, by lengthening of the tooth from periostitis) or from the pulp (as in the expulsion of old fangs), a tooth may be gradually forced out of its cavity. It only remains, after these given deductions, to prove that the eruption of the teeth must follow such a growth of tissue.

As before declared, the tooth cannot move forward by itself; hypotheses for this rest upon erroneous ideas. Other powers must, therefore, force the tooth out of its alveolus. We have on the one side the constantly pressing forward tooth, on the other side the constantly increasing granulation. What appears plainer than the view that the latter pushes the tooth forward by its gradual pressure? This view I consider very simple, and to prove the correctness of this, I must go back to the eruption of the permanent molars.

(To be continued.)

ODONTOMES.

(TRAITÉ DES TUMEURS. Par PAUL BROCA.)

ODONTOMES GENERALLY.

I.—*Definition.*

Difference between Odontomes and Tumours of the Teeth.—I denote, under the name of "odontomes," the tumours constituted by hypergenesis of the transitory or definitive dental tissues. The odontomes are essentially the consequence of a disturbance of nutrition occurring during the evolution of the dental bulbs. It is this which is indicated by the word "hypergenesis," which I shall use to define it. It is employed sometimes, by extension, to indicate the formation of the elements in excess in a tissue which becomes the seat of hypertrophy. Thus, for example, we say, in hypertrophy of the glands and of the adenoma, there is a hypergenesis of the *culs-de-sac* glands and their epithelium; in this statement hypergenesis plays a part in the formation of most tumours. But the primitive meaning of this word is much more restricted and more precise. Breschet, to whom we owe it, uses it to designate the excess of congenital development of the organs, and defines it as "an organic deviation, dependent on an augmentation of formative power." I do not give this definition as a model, but it proves, at least, that in origin the word hypergenesis refers to the disturbances of formation or genesis, and not to the disturbances which can arise in the organs succeeding the time of their development. It is, in this sense, perfectly in accordance with its etymology that I shall represent hypergenesis in the definition of odontomes.

Properly speaking, hypergeneses are generally congenital, because most of the organs complete their evolution during intra-uterine life, or very shortly after birth. But some organs, in the number of which teeth should be placed in the first rank, continue to run through the phases of their formation during extra-uterine life up to the time when the wisdom teeth finish their evolution at an adult age. The definition that I have given of odontomes must not give rise to the idea that these tumours are congenital. They might be so, in all probability, but I do not know of any example.

Odontomes can arise anywhere where a tooth is in the course of development. The abnormal dental germs which meet together, whether in the jaws or outside the jaws, can become the seat of these tumours. They are there even more exposed than the normal germs, and they may be easily imagined, if it be considered that they are already the result of an excess of development.

When a human tooth is completely developed, it no longer lends itself to the formation of an odontome; the phenomenon of dentification, it is true, has not come to an end. Although the tooth does not change in bulk, the ivory layer continues to increase up to an advanced age, at the expense of the dental cavity. But this deep dentification is effected in the hollow of a cavity with limited walls, and if sometimes the dentine that is in excess, instead of forming concentrical layers, accumulates upon one spot of the walls in such a manner as to form an intradental tumour, the latter, always extremely small, produces atrophy of the pulp, but cannot make the slightest exterior outlet.

Other tumours, not less different from odontomes, can equally occur in man, in the teeth of adults. Thus, irritation produced by caries of the crown can occasion in the dental periosteum a pathological condition, in consequence of which the layers of cement, more or less thick, are deposited on the fang. This same dental periosteum can besides become the seat of divers hypertrophied or neoplastic accidental productions; and finally the pulp, when the dental cavity is largely opened by caries or fracture, can be hypertrophied, and form a rather rare tumour. All these tumours of the teeth, whether internal or external, whether proceeding from the pulp or dental periosteum, must be entirely separated from odontomes. They are altogether distinguished by their clinical character, but what is still more decisive, they differ essentially in their origin and their evolution. An odontome is the result of the dental germ, and not of the tooth itself. This disease consists in an excess of formation of odontogenic tissues, or of dental tissues, in a work of amplification or expansion, partly general, partly partial, the usual result of which is a very considerable augmentation of the volume of the bulb, and in the lightest cases causes at least a noticeable deformity of this organ. And when the lesions of structure which accompany this work of hypergenesis are not sufficiently deep to affect the properties of the generating tissues of the tooth, when these become the seat of a dentification more or less regular, the dental mass which succeeds them almost always offers great bulk, and a form which has nothing in common with a tooth. Sometimes, it is true, the disease of the bulb being only partial, the tooth is developed in its entirety, and cannot greatly exceed its normal bulk; but it is always more or less deformed by an irregular tuberosity, which corresponds to the spot where the bulb is diseased. The most simple, the most circumscribed odontome always entails the existence of deformity, or rather malformation of the tooth; whilst tumours of the teeth, wherever their seat and whatever their nature, always retain the normal conformation of the crown and fangs. It follows, then, from what has gone before, that an odontome is essentially constituted by a disturbance during the development of the tooth, and can only occur during the period of formation. In man, and in many other mammals, the tooth, once formed, once having left its alveolus, is no longer exposed to this affection. But, in certain kinds of animals, the period of the formation of the teeth is prolonged beyond the time of their eruption. The incisors of the rodents, never having true fangs, grow during the whole of life. The molars of the horse, without possessing to the same extent this property of growing, continue to lengthen in a notable manner, notwithstanding the wearing of the crown, during a time which has not been rigorously determined, but which is certainly more than a year after their eruption. This real growth must not be confounded with the apparent growth, which is the result of the progressive issue of the tooth out of its alveolus.

It would be easy to cite other examples. If, then, instead of considering only the human teeth we consider teeth in general, the epoch of the eruption of a tooth should not be indicated as the final limit to the period during which time it can become the seat of an odontome, but we should say that the limit is for each tooth from the time when the pulps imprisoned in the fang can no longer be developed in length or breadth.

Up to a very recent period, the nature of odontomes has been misunderstood. Doubtless this has partly been occasioned by the frequency of these tumours, and by the great diversity in form which they assume; but, above all things, what has hindered surgeons from recognizing them is the uncertainty of the opinions which they possess upon the intimate phenomena of the evolution of the dental bulbs. Now, even although the researches of the microscope have brought to light these delicate questions, the knowledge which has been acquired is far from being common. I fear I might, perhaps, not be fully comprehended by the majority of my readers if I did not preface the history of odontomes by a detailed study of the anatomy and physiology of the dental bulbs.

End of Section I.

RESTORING OVER-HEATED STEEL.—When steel instruments have been injured by over-heating, they may be restored to their normal condition by heating to a cherry red and covering with the following mixture, or salve:—

2 parts horn-filings.
10 „ tallow.
1 part sal ammoniac.
1 „ pulverized charcoal.
1 „ soda.

When the steel gets cold it may be hardened in the usual manner.

RECENT VIEWS ON ANÆSTHETICS:

THEIR MORTALITY, AND MODE OF ADMINISTRATION.

By John Murray, M.D.

(London Medical Record.)

A monthly death from chloroform in this country alone, demonstrated by the alertness of the British Medical Journal, has challenged the beliefs and prejudices of a quarter of a century in the value of this popular anæsthetic. Chloroform has practically enjoyed in Great Britain a monopoly amongst anæsthetics since its first introduction. A position such as it acquired was an undesirable one. We had almost made up our minds, rightly or wrongly, that it could not be excelled, and our energies were accordingly directed to the promotion of mechanical safeguards, to the exclusion of a determined search for a better agent. The alarming mortality consequent on its use has now, however, been recognized, and a thorough revisal of the whole subject of anæsthesia is thereby demanded. An investigation, widening day by day, is in progress, and the medical journals contain weekly contributions bearing on the subject as evidence of the warm interest felt in the question. Lacking as it does most of the requirements of a proper inquiry, unscientific, unmethodical, wanting in uniformity, and involving a vast expenditure of labour and time, the practical examination of the question now at issue going on will, notwithstanding these drawbacks, in its own way lead to good results. It will probably establish the comparative safety and convenience of the anæsthetics which have been placed in our hands by science.

The Royal Medical and Chirurgical Society would be fulfilling an honourable task, if they supplemented the valuable services rendered by them a few years ago, by undertaking a second investigation into the subject of anæsthetics.

The writer in a Special Report on Anæsthetics and Anæsthesia (Lancet, Nov. 16, and Dec. 7, 1872), "has no doubt that in time all discussion will end in the fact of so beneficent a discovery as an agent which shall by common consent be accepted as safe in action, ready in application, and incapable of inflicting any troublesome or persistent after-symptom. This agent will be discovered by steady experiment on the physiological action of the various substances the chemist turns out of his laboratory for the uses of the physician." Dr. Richardson (Medical Times and Gazette, Feb. 15, 1873) thinks that the possession of a general anæsthetic devoid of all danger, though it will by infinite labour be one day discovered, is as yet only a delusion of idle untaught minds.

It is impossible, within the limits of this article, to give more than a short excerpt of the numerous opinions which have recently appeared on the subject. It will be necessary chiefly to limit reference to the contributions of the past twelve months. At the same time, it will be desirable occasionally to refer to communications of an earlier date.

The mortality by chloroform has been established to be considerable.

From a table furnished by the Registrar-General to the editor (BRITISH MEDICAL JOURNAL, July 2, 1870), it appears that in the five years 1852 to 1856 inclusive, thirteen deaths from chloroform were registered, or 2·6 per annum; while during other six years, 1863 to 1868 inclusive, fifty-seven deaths from the same cause, or 9·5 per annum, came within the knowledge of the Registrar-General. During 1872, the same journal gave unofficial details of twelve fatal cases of chloroform inhalation occurring during that year, exclusive of several in which the fatal issue was not directly consequent on the anæsthetic, but on foreign bodies entering the air-passages during its administration. Four deaths are reported as having occurred this year, one of which should be doubtfully recorded against chloroform. It would appear, therefore, that deaths from chloroform are either becoming more frequent, or they are more systematically recorded in the journals. Indeed, the editor of the BRITISH MEDICAL JOURNAL insists that, were it not for the extraordinary efforts made to obtain a knowledge of deaths from chloroform, these would in many cases remain unknown. Reports of deaths from other anæsthetics may in the same way fail to find their way to the public eye.

The mortality from bichloride of methylene, since its introduction by Dr. Richardson, has averaged one death yearly, a per-centage probably as great as that from chloroform.

The mortality from nitrous-oxide gas during the four and a half years of its use as an anæsthetic in this country has been directly *nil.* The Committee of the Odontological Society have collected the records of 58,000 cases in which it had been administered in this country, and have recorded, Dec. 2, 1872 ('Transactions of the Odontological Society,' Jan. 1873), their "firm conviction that nitrous-oxide is the safest anæsthetic known, and that not a single fatal case has occurred which can be fairly attributed to its action." A doubtful case of death from this agent has since occurred (BRITISH MEDICAL

Journal, Feb. 1 and Feb. 8, 1873) at Exeter; and a death occurred a year ago from tracheotomy performed for the extraction of a piece of a gag in the trachea inhaled during the administration of nitrous-oxide gas.

The statistics of ether inhalations in this country are not as yet published. M. Pétrequin, of Lyons (British Medical Journal, March 24, 1866), stated that, for the fourteen years during which ether had been exclusively given in that city, there had been no death from it. A general view, one which, however, must be very hypothetical, of the absolute and relative mortality caused by several of the anæsthetic agents in use, is given by Dr. Morgan ('The Dangers of Chloroform, and the Safety and Efficiency of Ether,' by J. Morgan, M.D.), who combines the American statistics collected by Dr. Andrews, of Chicago, and those of England by Dr. Richardson, of London. The mortality following the use of ether, according to this authority, is as 1 to 23,204, of a mixture of chloroform and ether as 1 to 5,588, of a bichloride of methylene as 1 to 5,000, and of chloroform as 1 to 2,873. Thus, Dr. Morgan says, "chloroform is eight times more dangerous than ether, twice as dangerous as a mixture of chloroform and ether, and more dangerous than bichloride of methylene."

There are thus four anæsthetics more or less extensively employed in practice in this country at the present moment. The respective advantages and disadvantages of these are now the subject of much controversy. The opinions of authorities are strangely at variance regarding all of these; but the effects, and the precautions to be taken to prevent the fatal consequences, of the vapour of chloroform seem beyond all other subjects to afford scope for endless discussion and strife. The recent advocacy of ether has fortunately not diminished this, as it has lent support to the opponents of chloroform as a safe anæsthetic, and called forth the energies of those who believe in the superior advantage of chloroform over all other anæsthetics.

Dr. Sansom (British Medical Journal, April 12, 1873) thinks that the present panic is apt to make us over-estimate the danger of chloroformisation. In favour of chloroform, Dr. Henry Marshall, of Bristol (Ibid. March 15, 1873), believes the present panic to be quite uncalled for, and that in competent hands the danger to life is very slight. Mr. Lister, a representative believer in chloroform, of the Edinburgh school, says that "the rules for the satisfactory use of chloroform are so simple, that mismanagement is really inexcusable.

Just as railway accidents are generally occasioned by culpable mismanagement, so death from chloroform is almost invariably due to faulty administration. Chloroform, in being deadly when mismanaged, is free from danger if properly used."

The marked confidence of these gentlemen and several other authorities in the safety of chloroform is not shared by the majority of those who have recently made public their views. The editor of the BRITISH MEDICAL JOURNAL (Nov. 2 and 16) says that we cannot be insensible to the strength of the appeal which the recent considerable list of fatal accidents makes to all, to desist from the use of so dangerous an anæsthetic, if any other less perilous substitute can be found, even though that substitute be less convenient in some other respects. The fatalities from chloroform (BRITISH MEDICAL JOURNAL, Dec. 21, 1872) have been so numerous, so startling in their various and unexpected character, that the surgeon can hardly see a technically uninformed patient mount upon the operating table, and submit himself at his bidding to the action of chloroform, without asking himself gravely whether he is doing right in exposing that person to the excess of danger to life which is involved in the administration of chloroform rather than of ether or of nitrous-oxide gas. The editor of the LANCET, in a report on anæsthetics in that journal (Nov. 16 and Dec. 7), says, "It is vain to conceal the truth that, since the fatal dangers of chloroform were fully detected, no operator has ever put a patient under the influence of the vapour with a perfectly serene sense of security." Dr. Green, of Bristol, in the BRITISH MEDICAL JOURNAL, May 25, 1872, says, "The time is not far distant when the public safety will demand some inquiry into the use of this deadly agent, more comprehensive than anything hitherto done in that way……I have not for many years ventured to operate under chloroform, either at the infirmary or in private, without having the galvanic apparatus ready for instant use." Mr. Erichsen (BRITISH MEDICAL JOURNAL, June 8, 1872) believes that, in "extra-hospital practice especially, the administration of chloroform is that part of the operation which often gives most anxiety to the operator." "A considerable amount of practice and much experience are required to enable a man to give chloroform well. No amount of care can make up for the want of a certain amount of practice." Dr. Thomas Jones (BRITISH MEDICAL JOURNAL, Nov. 23) is of opinion that, whatever instrument be used, and however much care be taken, out of a large number of cases, alarming symptoms are sure to occur in a few; and if these symptoms be not observed in time, and attended to, fatal results will follow; and in a still smaller number of cases death will inevitably take place. His experience has taught him that chloroform, even when most carefully administered, is more dangerous than is generally supposed. If, he continues, he were unfortunately compelled to take an anæsthetic, nothing would induce him to take chloroform.

(To be continued.)

NITROUS-OXIDE.

By G. Q. Colton.

(Dental Register.)

The question is still sometimes asked, "Who discovered anæsthesia?" To some readers of the Dental Register the following facts may prove interesting.

On the 10th of December, 1844, I gave an "exhibition of the effects of laughing gas" in the city of Hartford, Conn. Among those present was Dr. Horace Wells, a dentist of Hartford. A young man by the name of Cooley, while under the influence of gas, jumped about, and ran against some wooden settees on the stage. As he sat down next to Dr. Wells, the latter remarked, "You must have hurt yourself; you ran against those benches." Cooley at that moment raised his pantaloons, and was surprised to find his skin bruised and bloody, and declared that he was not aware of having run against the benches, and felt no pain until the effects of the gas had passed off.

At the close of the exhibition, Dr. Wells came to me, and related the experience of Cooley, and asked why a tooth could not be drawn without pain, while the patient was under the influence of this gas. I replied that I did not know, as the thought had never occurred to me. He said he believed it could be done, and he would like to try the experiment; that he would try it on himself first. Accordingly I agreed to take a bag of gas to his office the next day for the purpose. I did so, and Dr. Riggs was called in to perform the operation. I gave the gas to Dr. Wells, and Dr. Riggs extracted an upper molar tooth. On recovering consciousness, Wells slapped his hand on his knee, exclaiming, "It is the greatest discovery ever made! I did not feel it so much as the prick of a pin!" This was the first surgical operation ever performed where an anæsthetic was used to destroy pain, and the honour of the discovery belongs to Dr. Horace Wells.

Now the future history of anæsthesia, and especially as connected with sulphuric ether, is somewhat "mixed," but if the reader will note carefully the following facts and dates, he will not have much difficulty in reaching a fair and just conclusion.

After Wells made his first experiment on himself (December 11th, 1844), I instructed him to make the gas, and then went off on my exhibition tour. About three weeks subsequently I saw a paragraph going the rounds of the papers, that a Dr. Wells was extracting teeth without pain in Boston, while patients were under the influence of laughing gas! After Dr. Wells had tried the gas in Hartford for a few weeks, and satisfied himself of its value as an anæsthetic, he went to Boston, to make the discovery known to the scientific world. For this purpose he called upon many physicians, surgeons, and dentists, relating what he had done. They all laughed at him, and ridiculed his pretensions. Dr. Warren consented to introduce him to his class in Cambridge College, when, after a brief address, Dr. Wells administered the gas to a young man, and extracted a tooth. The young man cried out, though he declared that he experienced no pain. The experiment was pronounced a failure, and Wells was hissed.

Among the dentists upon whom Wells called was Dr. Morton, his former pupil. Dr. Morton treated him with ridicule, as had all the others. Dr. Wells returned to Hartford, discouraged, and resumed his practice, using the gas, however, in extracting teeth. This he continued till the end of 1845, about one year. We have the testimony of Bishop Brownell and his daughters, as also some forty others of the most respectable citizens of Hartford, that during this period Wells extracted teeth for them without pain, using the nitrous-oxide gas. At the close of December, 1845, or early in January, 1846, Wells went to Europe on account of failing health.

In the latter part of September, 1846, Dr. Morton having seen notices of Wells's operations, went to Dr. Jackson, a leading chemist of Boston, to learn how to make laughing gas, as he wished to test the truth or falsity of Wells's pretensions. Jackson said to him, "Why that gas exhilarates, makes people laugh, dance, &c.; if that will destroy pain, sulphuric ether will do the same. If you wish to try anything, try ether, and avoid the expense of apparatus to make the gas." These were substantially his words. Acting upon this hint, Morton purchased some ether, and according to all the testimony, including his own, Morton's first experiment with it was made on the 30th of September, 1846, almost two years after Wells had used the gas. There is the strongest proof that Wells had tried ether before he went to Europe, but did not like it, preferring the gas.

Morton reported the result of his experiment to Jackson, when they instituted a series of experiments with ether, which, proving successful, they made a joint application for a patent, for the discovery of the anæsthetic effects of ether. This application was signed Charles T. Jackson, William T. G. Morton, and dated "this 27th day of October, A.D. 1846." Before the patent was issued, however, it would seem that Jackson thought the whole affair might turn to no practical result, and he sold out to Morton his interest in the invention, and wrote to the Commissioner that he had assigned to Morton all his (Jackson's) interest in the patent. The patent was therefore issued to Morton.

When Wells returned to this country, he was astonished to learn that Morton had obtained a patent for the discovery of the anæsthetic powers of ether, and even claimed the honour of the discovery of anæsthesia! A discussion on the subject followed between them in the BOSTON MEDICAL JOURNAL. This discussion, and the mental anxiety in regard to the possibility of losing the honour, which he knew belonged to him, so worked on the sensitive nature of Wells, that he became deranged, and died in New York, January 24th, 1848.

At this time no one had used the gas as an anæsthetic save Wells, and it was some years before the surgical and dental professions recognized and adopted any anæsthetic. After the death of Wells, Morton set up the claim that nitrous-oxide was not an anæsthetic, and that anæsthesia could in no way be produced by it; therefore he discovered anæsthesia. As there was no one at this time who had the inclination or the necessary information on the subject to defend the claims of Wells, Dr. Morton's story was generally believed; and thus many eminent men were led to commit themselves on the subject in favour of Morton. This state of things continued for twenty years, the nitrous-oxide having passed out of the public mind as an anæsthetic till I revived it, in 1863. The facts attending this revival are as follows:—

Not being a dentist or a surgeon, I had no use for the gas as an anæsthetic. But I remembered the experiment with Wells, and often recounted the above facts in my introductory lectures. On one occasion, at New Britain, Conn., during the summer of 1862, after stating the above facts respecting Wells, a lady asked me if I would administer to her the gas, and have a dentist—whose office was in the building—extract some teeth. I consented, and the dentist, whose name escapes me at this moment, extracted teeth not only for this lady, but for two others. This dentist was so delighted with the operation, that he insisted upon my instructing him how to make the gas. A year passed, when I returned to New Britain again, in 1863, to give another series of lectures and exhibitions. I learned that this dentist had used the gas during the past year with entire success, giving it, as he stated, to over six hundred patients. I told him that he was the first dentist whom I had been able to persuade to try the gas. As I was going to New Haven to lecture, I asked him if he would come there, and we would extract teeth for one week with the gas, as I wished to establish its anæsthetic power. He came, and we commenced in the office of Dr. J. H. Smith, where, with the aid of Dr. Smith, we continued the business for three weeks and two days, in which time we extracted something over three thousand teeth and stumps. This I thought was a little better business than lecturing, often to "a miserable account of empty boxes," and determined me to come to New York, and establish an institution devoted exclusively to extracting teeth with the gas. As my name has been for so many years identified with laughing gas, I called it the "Colton Dental Association."

It will be seen by the above that I claim no honour in the discovery of anæsthesia, that honour belongs to Dr. Wells; but I confess to some pride in being the occasion of the discovery, and of having given the gas to Dr. Wells for the first operation ever performed with an anæsthetic. If any honour is due to me, it is in reviving and establishing the use of the gas after it had lain dead and forgotten for twenty years.

As to the value of the gas as an anæsthetic, I can present no stronger evidence than the following facts:—After I had given the gas for nine months, I commenced, Feb. 4th, 1864, to ask my patients to write their names on a scroll. These names I have numbered regularly from the beginning. The present number on the scroll is sixty-three thousand three hundred and six (63,306). In all this number we have never had an accident, or even had to call a carriage to take a patient home. We have sometimes had patients swallow some blood, causing nausea and vomiting, and in rare cases vomiting where no blood was swallowed, owing to some peculiar condition of the stomach or nervous system. There has never been a well authenticated case of death from the effects of the gas.

In a communication in the REGISTER of May last, signed "H.," the writer assumes that the death of Mrs. O'Shaughnessy in this city was caused by the gas. It was proved at the coroner's inquest that she only attempted to inhale the gas three or four times, and finally concluded to have her teeth drawn without the gas, which was done. The woman was in a fearful state of nervous excitement, and as much afraid of the gas as the pain. She fainted from fright and shock to the nervous system—an occurrence which has taken place many times before the gas or anæsthesia was thought of. I think Dr. Newbrough, the dentist, made a mistake in not placing the woman flat upon her back as soon as the fainting occurred. At the inquest it was found that the lungs were in a state of congestion, and the verdict of the jury was that death was caused by "asphyxia," which in their opinion had been induced "by gas administered." Now all authorities, including Prof. Ziegler and Prof. Doremus, lay it down that the quickest remedy for asphyxia is to administer nitrous-oxide gas; that instead of producing, it prevents congestion. Prof. Weisse, one of the jurors, stated at a recent meeting, held in the College of Physicians and Surgeons in this city, that the jury used the words "gas administered," and purposely avoided the words "nitrous-oxide," as they thought the gas might have been impure, or chloroform might have been put into the bag. In justice to Dr. Newbrough, I should state that there was no evidence that chloroform was used; and I went to his office the next morning, and at his request inhaled some of the gas which was still left in the gasometer, and found it pure gas. It is perfectly clear to my mind that if the woman had taken the gas properly, she would have been alive now. She died because she had her teeth drawn without the gas. There would have been no shock to the system, and she could not have fainted. She had not taken as much gas, in all the attempts, as I would give to a child two years old.

A word of advice, in conclusion, to dentists. When chloroform is administered, and the patient is carried to the point of stertorous breathing, it is considered a point of danger; but with the gas the point of the stertorous breathing is only the commencement of the anæsthetic sleep. Dentists, fearing to give too much, often stop at this point, and by the time they get the instrument on the tooth the patient is half awake, and, of course, experiences pain.

I would not be understood as saying that there is no danger in the administration of nitrous-oxide gas. No doubt injury can be done with it. Caution, judgment, and discretion are to be exercised. It is very important also to have a pure gas. It should always be given from a valve mouth-piece, and not from a bag; though a bag can safely be used for most patients, provided it holds from seven to eight gallons. With the valve mouth-piece all carbonic acid is avoided.

MEMOIR UPON CYSTS OF THE JAW.

By Dr. E. Magitot, Lauréat de la Faculté, de l'Académie de Médicine, &c. Translated from the Archives Générales de Médicine, by Thomas C. Minor, M.D.

(Cincinnati Lancet, Jan. 1873.)

The present monograph has for its object the study of those cysts which arise in the substance of the maxillary bones. The principal things which we intend to treat of are, the determining of the nature of these cysts, the indication of the place it is necessary to assign them in the nosological scale, and the exact mechanism of the production of the lesion. The collection of our researches is founded upon the critical and analytical examination of cases gathered before us in this order of studies, and upon the investigations of our own personal observations. We shall treat only, in concluding, of the symptomatology, progress, and treatment of cysts of the maxillæ, these points having already been carefully studied and clearly elucidated by other authors. The particular purpose we shall pursue in this study is to establish the fact that all cysts of the jaw constantly and exclusively recognize for an origin a particular condition of the dental system. It is this problem, already foreseen by various authors in some of its particulars, that we hope in this short essay to solve in such a way as to free it from pathogenic theory, and formulate it in a precise manner.

I. *History of Cysts of the Jaw: Criticism of Cases.*—The ancients did not recognize cysts of the jaw, for they confounded them in the general class of tumours.

We come down to the middle of the seventeenth century, with Scultet ('Armentarium Chirurgicum,' Hague, 1654), to find the first expression of *chyste*, and the finding of a closed cavity containing a material "*jaune,comme du miel*" (yellow as honey). The author neither suspected its nature nor its mode of production. He remarks, however, in one of his observations, that in order to cure them, it is necessary to remove the small hard masses from the neighbourhood of the pouch. It appears probable to us that these masses were dental *débris*.

A century later, Runge ('Thèses de Haller,' Lausanne, 1775) published cases still more complete, in which the relation between the alterations of the teeth and the appearance of the tumour is clearly established. The author, however, gives no explanation, and confines himself to mentioning these circumstances. In one of his cases, the cyst was opened by the alveola, two teeth being extracted, thus treated and cured in this way.

Some years later, we find observations of cysts of the jaw published by Bordenare ('Mémoires de l'Acad. Royale de Chirurgie,' 1774), Morelot ('Mémoires de l'Acad. Royale de Chirurgie,' 1778), and Jourdain ('Maladies de la Bouche,' 1778, vol. i. p. 125). The first of these authors very clearly relates that, in a voluminous cyst occupying the inferior maxilla, he came across the roots of a molar tooth, denuded, and entering the pouch, and that on extracting this tooth the liquid escaped through the socket. The observation of Morelot is much more interesting and more complete, for the tumour, dissected at the autopsy of the patient, permitted him to find, to the great surprise of his assistants, a tooth implanted in the wall of the cyst. This is, we believe, the first example of a *follicular* cyst.

The cases of Jourdain relate to cysts of the superior maxilla, manifestly foreign to the sinus, although this pre-occupation may be constant on the part of the author to whom we owe, as it is well known, those very curious studies and very remarkable observations regarding the maxillary sinus and its diseases. In two cases of Jourdain's, notwithstanding the therapeutical attack internally and externally which they underwent, as soon as the teeth, which were greatly altered, were extracted, a rapid cure took place, assisted in the meanwhile by dressings and injections used in the alveola. However, another observation of Jourdain's, that we may, with the two last, connect to cysts of the jaws, is relative to a pouch which was opened through the alveola, at the centre of which was met a tooth adherent to the wall. It seems to me that this was still another follicular cyst.

Whatever it may be, and, though in these different relations we might already recognize several types of cysts of the jaws, no mention of the proximate or remote cause, no suspicion of its mode of production, is betrayed on the part of authors. It is necessary to come down to the commencement of this century in order to find the first manifestation of this kind. It is Delpech ('Chirurgie Clinique,' 1816, tome iii. p. 439) who, having noticed that certain teeth had about them, when being extracted, membraneous filaments adherent to their roots, and at times small closed pouches, advanced the hypothesis that cysts of the jaws develope themselves *in the dental pulp or in its vasculo-nervous cord*. Although this explanation may be, as we see, a little confused, it is evident that Delpech was upon the track of one of the origins of these cysts. The presence of membraneous filaments adherent to an extracted tooth establishes very clearly from thence the existence of certain distinct pouches; but, as these cases were almost all met in the superior maxilla, they have invariably been connected to those affections designated by the name of deposits, abscesses, or hydropsies of the maxillary sinus. In the mean time a certain number of observers, among whom we may cite Hunter, Brodie, Callisen, Cooper, and Siebold, had already sought to establish that, in bone in general, and consequently in the jaw, there may be devoloped spontaneously pouches filled with liquid, and distinct from natural cavities.

After Delpech, Dubois (see Boyer, 'Maladies Chirurgicales,' 1818), and Marjolin (cited by Duchaussoy, 'Thesis,' 1857, p. 32), described two examples of cysts developed outside the aveolar borders—one in the orbital border, the other in the palatine arch, and each one contained a healthy tooth. These were certainly two cases of *follicular heterotopia.* It appeared a very strange thing to these observers; but they did not attempt, however, to elucidate its mode of development.

We come, finally, to Dupuytren, with whom the question of cysts of the jaw takes a new physiognomy ('Leçons Orales,' 1839, 2nd ed. tome ii. p. 129). This affection enters definitely into the nosological scale. Dupuytren describes its progress. He lays down its diagnosis, and it is to him that is attributed, wrongly however, as we shall see, that particular sign of fluctuation called *bruit de parchemin.* Regarding treatment, Dupuytren was nevertheless the first who dreamt of curing voluminous cysts of the jaws otherwise than by resection of the bone, almost the only operation employed before him. One operation attempted in this sense had, in the meanwhile, resulted fatally. This was the case of a small girl, aged seven years, who, after a violent contusion, was attacked by a considerable swelling of the superior maxilla. Dupuytren, after having diagnosed, at his clinic, a cyst of the jaw, opened it through the mouth. A mass of blackish blood was expelled. Consecutive inflammatory symptoms carried off the patient, and the autopsy showed that in the maxilla there were multiple cavities filled with a fibrinous material, and with *a soft substance easily broken up.* No investigation was made regarding the nature of these masses, nor was any suspicion evinced regarding the possible participation of the follicles of second dentition at that time contained in the jaw, and which must, after the traumatism experienced, have become the seat of multiple effusions. Perhaps a commencing disorganization alone might have caused the tumefaction existing, designated wrongly, in our opinion, under the name of cyst.

So then we see, if the question of diagnosis and treatment occupied Dupuytren, it was not the same regarding the pathogeny which was not suspected, as the professor of the Hôtel Dieu exclusively looked at the trouble from a purely clinical and surgical point of view.

Other observations of cysts of the jaw that we come across in the works of Dupuytren relate to cases of cures made by directly opening the sac, and afterward dressing it. In one of them the eminent surgeon noticed that the commencement of the tumour coincided with fruitless attempts at extraction. Is it not thus plain to see the frequent beginning of a cyst of the periosteum? In another case, the cyst occupied the point of the inferior maxilla corresponding with the wisdom tooth, which had not yet appeared. The cyst having been opened, there was found a fibro-cellular mass, on which ablation was performed, but it was not examined. Is it not still allowable to admit that it arose here from a cyst dependent on the wisdom tooth remaining in a follicular state? Whatever it may have been, the attention of Dupuytren being attracted toward this question of cysts of the jaw, a physician of Paris, Dr. Loir ('Clinique de Dupuytren'), presented at the same time, at the clinic of the Hôtel Dieu, a cyst of the superior maxilla, in which dental intervention was not doubtful. It contained, following the expression of Dupuytren, *a reversed canine tooth*, and occupied the palatine apophyses. This was evidently a case of heterotopical follicular cyst. Some years later, Lombard ('Thèses de Montpellier,' 1836), Blasius ('Arch. de Médicine,' 1840), and Syme ('Zeitsch. für Chir. und Klin.,' von Aug. Blasius, Halle, 1835), published observations of cysts of the superior maxilla, developed heterotopically in the sub-orbital fossa, or projecting into the sinus, in which their relation with the teeth was clearly determined, and the latter were considered as proximate causes of the lesion.

In 1840, Forget ('Thèses de Paris,' 1840, No. 156), in his inaugural thesis, published, regarding cysts of the jaw, considerations that he retracted some years later ('Mém. de la Soc. Chir.,' 1853). The following were some of his ideas: among cysts of the maxillary bones there are a certain number which have, not only for a cause, but also for a seat, the alveola of the teeth, and he gave them the name of *alveolo-dental cysts*. This was the first time that the relation of these cysts with the dental system was formulated in a clear manner.

However, this term of alveolo-dental cysts still fails in sufficient precision, and its pathogeny is not clearly established. Besides, the term *alveolo-dental* was only suitable for cysts in adult age, and from thence the explanation could only be addressed to those which developed themselves in infancy, during the period of evolution of the follicles. It is to M. Guibout ('Union Médicale,' 1847) that we must concede the credit of having first advanced the hypothesis that a cyst of the jaw might arise in the dental follicle itself. After advancing this proposition, M. Guibout, understanding well that all cysts could not definitely enter into this special category, advanced the two other explanations which follow. A cyst may be "*the result of a vice in dental evolution*," hypothesis which confounds itself with the first; it may also be "*the consequence of the vital activity that nature displays at the centre of the maxillary bones and from vicissitudes of form, of structure, and of dimensions, which these bones undergo.*"

Let it be as it may, from this last hypothesis, somewhat slightly *vitalistic*, the follicular cyst was finally suspected, and it was in the observation of one of these cysts, found in a woman of fifty years, that M. Guibout demonstrated his theory. The tumour, it is true, dated more than twenty years back, and from its commencement up to the moment it was observed the wisdom tooth had not appeared. It was to its follicle, attacked by an arrest of evolution and trouble of nutrition, that M. Guibout very judiciously attributed the appearance of the cyst.

Aside from these two authors, Forget and Guibout, whose names will always stand recorded in connexion with the history of cysts of the jaw, representing, as they do, the two initial hypotheses of the pathogeny of these alterations, the observations succeeding were clearer, more complete, and, for the most part, more susceptible, from their details, to be connected to one or the other species of cysts that we are endeavouring to establish.

Thus we find, in the observations of Baum (cited by Paget, 1853), Nelaton ('Bull. de la Soc. Anat.,' 1856), Barue (cited by Duchaussoy, *loc. cit.*), Maisonneuve ('Clinique Chirurgicale,' 1863), Legruest ('Bull. de la Soc. de Chir., 1863), Giraldes ('Leçons Cliniques, &c.,' 1869), B. Cooper (cited by Holmes), Wormald (in 'Lancet,' 1850, tome i. p. 756), and Salter (Holmes's 'Syst. of Surg.,' 1870), cases in which its dental relation is not put in doubt, and which, without bearing a precise designation, appear to us to manifestly connect themselves to the variety of cysts of the dental follicle. Salter describes, in a special chapter, *dentigerous cysts*, which he attributes to abnormally placed teeth, supplementary or not. J. Paget (*loc. cit.*, p. 90) likewise describes them, and the term *dentigerous cysts* has been since then adopted in England by authors occupied with the subject. We shall cite, for example, the cases reported by Tomes ('Trans. Odont. Soc.,' 1863) and Coleman ('Trans. Odont. Soc.,' 1865).

Other English and American surgeons, Erichsen ('Science and Art of Surgery,' London, 1853, p. 677) and Gross ('System of Surgery,' Philadelphia, 1864, vol. ii. p. 432), for example, point out likewise, among the cysts in bone, their very frequent presence in the maxilla, but without publishing any cases.

One of the observations among those that we come to cite, that of M. Legruest, is entitled *alveolo-dental cyst*, conforming with the denomination adopted since M. Forget. The cyst contained two teeth, and the details of the case are of so plain a nature as to permit us to be assured that it arose from a cyst of the follicle, or of both follicles fused, of the teeth designated.

On the other hand, the observations of Dolbeau ('Bulletin de la Soc. Anatomique,' 1858), Chassaignac ('Bulletin de la Soc. de Chirurgie,' 1859, Mars 16), Vitalis ('Bulletin de la Soc. Anatomique,' 1858, 2nd series), Gosselin ('Gazette des Hôpitaux,' 1855, p. 529, *et seq.*), and Letenneur ('Bulletin de la Soc. de Chirurgie,' 1862, 31 Aout), are manifestly connected, after the examination to which we have given them, to the variety of periosteal cysts; the majority of these cysts being consecutive, either to dental alterations recognized in the subjects, or to fruitless attempts at extraction. It is well, then, to establish this, as the ordinary process of cysts having their origin under the dental periosteum. Another case of the same sort, cited by M. Houel ('Bulletin de la Soc. Anatomique,' 1847, tome xxii.), is a specimen in Dupuytren's museum. It is a cyst of the inferior maxilla developed on the median line. The pouch opened shows the roots of two incisor teeth dipping into the cavity, and deprived of their periosteum. No doubt they may have served in forming the cystic wall itself. Unfortunately, no observation accompanies this interesting specimen. About the same time I also published an observation of a cyst of the dental periosteum ('Mémoire sur les Tumeurs du Périoste Dentaire,' 1860). It arose from a small sac, which had been brought about at the summit of a root during the extraction of the latter. The cyst was the size of a large pea; it was not destroyed, and its viscid and purulent contents contained a considerable quantity of cholesterine. This fact was assuredly not new. Similar cases had already been presented by other authors, Bordenave (*loc. cit.*, p. 329), Fauchard ('Le Chirurgien Dentiste,' tome i. p. 426), and Delpech (*loc. cit.*, p. 442), for example. Its size was very small, but these are, in the meanwhile, the same cysts which, under other influences, may take on a development which gives them the size of an egg, of a fist, or, at the same time, even of a child's head.

(To be continued.)

REPORT ON THE CHEMICAL QUALITIES OF FLETCHER'S WHITE ENAMEL.

By Richard V. Tuson, F.C.S., Professor of Chemistry in the Royal Veterinary College.

(Continued from vol. i., p. 561.)

Estimation of the amount of Zinc dissolved.—The zinc contained in the filtrates obtained by the methods described in the last number of this Journal was converted into and weighed as oxide (ZnO). In the subjoined table, however, the per-centage of the hardened cement, dissolved by the various solvents experimented with, is calculated as oxychloride of zinc ($ZnO.ZnCl_2$), it being assumed that this compound is formed on the admixture of the solid and liquid materials used in the preparation of the stopping.

The orange and lemon juices were obtained by expression, and used in their natural or undiluted state. The other liquids were of the strength they would be introduced into the mouth if administered medicinally.

By reference to the annexed table it will be seen that every liquid therein enumerated, with the exception of the solutions of the bicarbonates of potash and soda, exerted a considerable solvent action on the hardened cement. The most remarkable fact, however, which this investigation has brought to light is, that cold vinegar dissolves a larger proportion of the stopping than either of the other fluids to the action of which it has been subjected. That vinegar at ordinary temperatures should have a greater solvent action than it has at 212° F. seemed so improbable, that the experiments were repeated: corroborative results were, nevertheless, obtained.

In addition to the foregoing experiments, several fragments of the hardened, washed, and dried cement were placed in bottles containing sulphuretted hydrogen and the vapour of sulphide of ammonium—gases generated during the putrefaction of animal matter, such as pieces of meat between the teeth, to ascertain whether or not such bodies would discolour the stopping. It was observed in both cases that blackening or dark browning took place.

Although the results of my experiments indicate that the stopping prepared by Mr. Fletcher is acted upon by many liquids taken as food or as medicine, it must be distinctly borne in mind that the trials to which I have submitted it were much more severe than those it would have to undergo in the mouth, and consequently, that its use, instead of being condemned, must be persevered with, so that a thoroughly practical and just opinion of its merits may be obtained.

The ability, patience, and perseverance which Mr. Fletcher has brought to bear on the subject, entitle him to such consideration, especially as the results of Mr. Alfred Coleman's investigations clearly indicate that Fletcher's filling is decidedly superior to the other compounds upon which he experimented.

TABLE showing the amounts *per cent.* of zinc calculated as oxy-chloride of zinc ($ZnO.ZnCl_2$), dissolved out of the hardened cement in thirty-six hours, by the under-mentioned liquids :—

Name of Solvent.	Strength.	Per Cent. of Oxychloride of Zinc, Dissolved in 36 hours.	
		At Ordinary Temperatures.	At 212° F.
Orange Juice	Natural.	9·8	16·6
Lemon Juice	Natural.	48·0	96·0
Bicarbonate of Potash .	1 in 16 of water.	No action.	No action.
Bicarbonate of Soda .	1 in 16 of water.	No action.	No action.
Carbonate of Ammonia	1 in 48 of water.	18·5	80·3
Hydrochloric Acid . .	1½ minim strong acid in 1 oz. water.	30·8	40·5
Nitric Acid	1 minim strong acid in 1 oz. water.	33·9	35·5
Sulphuric Acid . . .	1 minim strong acid in 1 oz. water.	29·6	32·7
Vinegar. . . . . . (Sarson's best malt)	...	94·2	53·0

REVERIES IN A DENTAL CHAIR.

(MISSOURI DENTAL JOURNAL.)

A CORRESPONDENT of the New York COMMERCIAL ADVERTISER, who has lately been to the dentist, vents her feelings thus:—

The performance of preparing a tooth for the reception of the gold, after the decay has been cut away and the cavity made ready, is barbarous in the extreme. Imagine yourself seated in the luxurious chair, with its head-piece and foot-rest. Probably you have been through the ordeal of having your teeth "separated," a divorce, by the way, will banish you from "bed and board" without either lawyers or red tape, and is effected by wearing a piece of wood between the teeth. It is not unlikely to suppose that your masticators are all sore, that you have eaten or slept but little for the past week, that your nerves are not over strong, nor your disposition more than amiable. Your tooth is drilled and cut until the cavity is carefully prepared, and your endurance almost exhausted. The dentist leaves you to pass a moment with the victims waiting in the front parlour, who have kept the door bell in motion for the past hour, and as each one entered caused your tormentor to smile complacently, and display a a set of ivories in perfect order. (Dentists always keep their advertisements in an attractive condition.) He returns, and then begins the systematic torture. A large apron of rubber cloth is tied about your neck, while two towels are tucked around your throat underneath. A piece of thin gutta-percha eight inches square is then forced between several of your teeth that adjoin the one to be filled. It is carefully strained over that tooth until the gum is forced back to the root. A silver spring is then fastened below the rubber to keep it up tight. By this time your eyes are streaming tears, even should you be a stoic. A band, with clamps at each end, is now thrown about your chair, and the piece of gutta-percha is secured firmly at the sides of your cheeks. Your head feels as if it were in a vice. Make up your mind to remain in this position three hours, with your mouth held open by a strong hand, with the saliva streaming down your cheeks, and with an urchin holding a mallet, and pounding in the gold as fast as the dentist places it. Dentists continually quarrel with the mallet boys: and if ever there was a set of imps it is these heedless fellows. They will look the "other way," and rap on the "sore spot" in your tooth as if they were keeping time to a gallop. They are the particular objects of a dentist's ire, and provoke these exclamations: "Are you going to sleep?"

"Strike easy!" "Look what you are about." The patient is powerless to speak, and can only roll his eyes imploringly as the mallet boy seems to take revenge on him.

Most of our dentists have their offices in their houses. This is a mistake; because when men remain at home all the time they are hen hussies. We all know how it affects mankind to remain at home one day. Take New Year's day for instance, where the head of the family decides to make no calls. He will know the bill of fare for dinner before luncheon is past, and will likely enough inform you the pickles are moulding before you have suspected the cellar to be damp.

Dentists have all an especial interest in their furnaces, or in some repairs the plumbers or carpenters are executing on their premises. They will leave you for a space of time, that seems interminable in your cramped position, to attend to some errand pertaining to their household—perhaps to one of the children who is sure to tumble down stairs. You are of no consequence now. The cavity cannot get wet, fume about and squirm around as you may to try and rest your tired head and jaws. Your tormentor will come and go, and wash his hands until you wonder at the amount of his water tax, and when at last the gold is all in, and the filling completed, when the straps and springs and rubber are removed, and you take your paralyzed jaws between your hands, and you endeavour to shut them, do not suppose you are to be released; you are just ready for the "dental drill" or "engine" which is to polish the gold that has been so firmly packed. This engine is a most formidable looking machine, and on its first appearance you shudder, and conclude you are to be decapitated now for a certainty. This drill has a reverse-acting spiral spring, with a cord attachment and drive-wheel with a revolving axle, into the centre of which the drill bit is set. It is made to revolve by the action of the foot on a treadle. The bit is placed next to your tooth and the whole set in motion; while you undergo the delightful sensation of a file whirling in your tooth, your filling is polished as bright as a mirror. It is well to be thankful for all things, and we may surely congratulate ourselves on the permanency of the work accomplished by the assistance of these very barbarous but important inventions.

Mr. Augustus Cronin, of 120, New Bond Street, has been appointed Dentist to the London Homœopathic Hospital, Great Ormond Street, W.C.

EFFECTS OF FETID BREATH UPON THE SYSTEM.

In the course of a discussion on the above subject, at a meeting of the Ohio State Dental Society (reported in the Dental Register), Dr. Hawxhurst remarked: — Another matter that is full of interest in connexion with this subject relates to bad breath from suppressed menses. The menstrual fluids contain many volatile matters that saturate the blood when retarded or suppressed, and find their way out through the lungs. He had observed frequently a very peculiar and unpleasant odour in the breath of women, and had discovered in the case of two girls, who exhibited the same qualities of breath, that the menstrual flow was entirely suppressed. On talking with Dr. Robbins, of Meadville, he had obtained other instances of the same kind. During his investigations of this subject, he had observed so many instances in which the suppression of the menstrual discharge was accompanied by this peculiar fetor of the breath, that he had lately set it down as one of the causes of bad breath. It seems that this matter, which should be drawn off from the blood monthly by way of the uterus, if retained in the system, may be vicariously discharged through the pulmonary surfaces.

Dr. Rehwinkle asked Dr. Hawxhurst if he had ever observed any particular conditions of the breath accompanying symptoms of insanity.

Dr. Hawxhurst replied that he had not thought much about that. Wherever insanity occurs there is generally some obstruction of the physical functions. We all, of course, recognize that the mind is dependent upon the body, and that mental action is modified by physical conditions. May it not be that the different kinds of tissue-changes that go forward during insanity bring about a different composition of the blood, and that thus unusual and abnormal compounds or substances are presented for elimination at the lungs? In general, when physiological action is normal, there is nothing in the system that will produce bad breath. The carbon and hydrogen when oxidized are inodorous. The essential oils, and all impurities, when sufficiently burned down by oxygen, are inodorous. But when these are excessive in quantity or peculiar in nature, as they might be in insanity, this oxidation may not be complete.

Dr. Rehwinkle remarked that though he was entirely unable to throw any light upon the subject, yet it was a fact that in marked cases of insanity bad breath was perhaps one of the most common and peculiar features. It had always been an interesting subject to him, but he could never satisfy his mind why this should be. He had never been able to decide that it is in consequence of the dependence of the mind upon the physical structure, because in many instances the functions would all seem to perform their work with great regularity, the digestive organs, &c., all in excellent condition, so that it seemed there was nothing in the physical condition of the person concerned to justify you in supposing that the fetor of the breath arose from any cause in operation here. In regard to bad breath in females occurring in consequence of the suppression of the menses, he had made no observations. It was entirely a new idea to him, and had never presented itself to his mind in this shape before. It was, however, he thought, a matter full of interest.

Dr. H. A. Smith had observed that at that period in females termed the change in life, when the menses are suppressed by the order of nature, their breath is especially offensive. He had had opportunities to observe this in several instances. After this period had passed, and the system had conformed to nature's demand, this offensive breath passed away.

DESTRUCTION OF THE GUMS AND ALVEOLAR PROCESSES AS WELL AS OF THE SOFT PARTS OF THE THROAT, FOLLOWED BY DEATH.

By Thos. F. Rumbold, M.D., St. Louis, Mo.

[Read before the St. Louis Dental Society.]

(The Missouri Dental Journal.)

Mr. President:—I wish to read the history of the following case, for the purpose of calling the attention of the members of this Society to a rare disease of the gums and alveolar processes, and ask them, if they should come across such a case, to let me see it, that I may have an opportunity, along with them, to study this disease.

Charles H. W., aged twenty-nine years, recommended to me September 17th, 1869, by Dr. Homer Judd, dentist of this city. About three months ago he had a tooth extracted because of obstinate ulceration of the gum surrounding it, but previous to its extraction it had rapidly become very loose. After this tooth was taken out, the alveolar processes seemed to be removed by the same molecular destruction that melted away the gum. The extraction of the tooth did not stop the disease, nor was it checked by any application made to it.

When the case came under my observation he had had all the molar teeth extracted. The alveolar processes had been destroyed to the depth of half an inch, leaving the bone covered with a granular fungus, the colour of which was but slightly increased as compared with the surrounding mucous membrane. This bled upon the slightest touch, yet there was but little pain attending this destructive process. He was very positive that he had never had any opportunity to contract venereal disease.

On close examination, it was found that the disease had commenced by attacking the peridentium of the tooth at the upper margin of the gum, and had followed this down the entire length of the fang, thus loosening the tooth. After the destruction of the investing membrane of the tooth, the ulceration spread to the gum and the alveolar process, melting both down to the body of the maxillary. The gum on the inside and outside of the left bicuspid was entirely separated from the tooth by the ulceration, and when this portion of the gum was pressed against the tooth a small quantity of fetid pus appeared. When this secretion was placed under the microscope nothing of unusual character was observed. The loose gum could be cut without occasioning much pain; the contrast in this respect between the detached and other portions of the gum was quite marked. Two days previous, the patient said, the gums surrounding this tooth were firm, and as sensitive as any portion of his mouth, and thought, judging from his past experience, that it would take about eight or nine days before the tooth would begin to become loose, then three or four more before it would be forced inward by the pressure of his cheek against it. None of the teeth have been discoloured in the least. The disease was spreading towards the throat, had destroyed the anterior pillar of the arch of the velum palati, and was attacking the remains of an indurated tonsil. He did not have much pain in performing the act of deglutition, but had a sense of "drawing" in the left ear during the performance of this act. Since ulceration had attacked the soft palate he has had a regurgitation of his food, especially of fluids, up into the pharyngo-nasal cavity. No great amount of inflammatory action, that could be discovered by the aid of the laryngoscope, was found in the air passages above and below the mouth. He has heretofore enjoyed usual good health. His appetite was good; bowels regular; slept well; pulse regular, 80 per minute, full and strong. He has lost a little in weight of body—about two or three pounds—within the last two or three weeks.

The local treatment consisted in the application, by spray, of about one ounce of the following solution, viz.: liquefied carbolic acid, 2 f. dr.; glycerine, 2 f. oz.; water, 7 f. oz. The instrument being so constructed as to throw this mixture directly upon the diseased surfaces. This had the effect of removing all of the fœtor, and relieving the ear symptoms during the act of swallowing.

Sept. 18th. The patient thought the disease had been checked, but upon examination, this was found to be incorrect. He had not been quite so frequently annoyed by his food passing up into the nostrils, nor had he so much pain in the ear during the act of deglutition. The same course of local treatment was pursued to-day, and repeated in the afternoon; and, in addition, prescribed a tonic and laxative, as his bowels were a little constipated. He left feeling quite encouraged about his case.

Sept. 20th. To-day the patient is fearful that the disease was pursuing its usual course, which upon examination was found to be the case. All that portion of the gum of the bicuspid above the top of the external alveolar process has disappeared, and about one-half of that on the soft palate had not progressed, and the pain in the ear was entirely gone. The local treatment previously employed, which had a very soothing effect upon the diseased parts, was again applied.

Sept. 21st. The disease is still advancing. The pain has been more severe in the ear and throat than at any previous time. The soft palate has a notch about 2‴ deep, and 4‴ long, on the left side; both arches are so much reduced as to be scarcely recognizable; the left tonsil is entirely gone, leaving a cavity fully half of an inch in depth; the glosso-epiglottic fold on the same side is also attacked by the ulceration. At each visit it was observed that there was no swelling of the parts attacked by the ulceration, nor any pain, except slightly, when pressed. The treatment to-day consisted in the excision of a portion of the healthy gum in the immediate neighbourhood of the ulceration, so as to form a line of limitation on the left cuspid tooth. The gum was carefully cut away, then thoroughly cauterized with arg. nit. and a pledget of cotton, saturated with a solution of chloride of zinc, grs. xx.; water, 1 f. oz., kept constantly applied. The remainder of the diseased surface was thoroughly sprayed with the carbolic acid solution, increased to four times the strength of that previously used. He was directed to stop the laxative, and take three grains of quinine and ten drops of the muriated tinct. of iron at 7, 9, and 11 A.M. of each day.

Sept. 24th. The patient presented himself looking very much worse, and feeling very weak. He has lost nearly a pound in weight every day this week; has not been able to sleep without taking morphine every night, because of the great and continued pain in his left ear; as soon as he falls asleep he is covered with profuse perspiration. Pulse about 96, small and hard; bowels constipated; appetite "pretty good." He could not take the iron, but has taken the quinine as directed; he has also "taken some pills" to operate on his bowels. The regurgitation of his food into the pharyngo-nasal cavity has been more troublesome. On examining his mouth it was observed that the ulceration had already passed to the left lateral incisor. All of the surface of the excised portion of the gum was in a granular condition, looking worse than the parts that were treated only by the spray. The destruction of the soft palate by the ulceration had extended down the left glosso-epiglottic fold, reaching the epiglottis. The entire ulcerated surface was carefully cleaned by the spray of the carbolic acid solution, and then, with a small sponge as large as a pea, touched with a solution of the chloride of zinc, one dram to the oz., which occasioned considerable pain. He was supplied with a spray producer, and a bottle of carbolic acid solution, and directed to make applications every two or three hours. The quinine was continued, and he was advised to take "home-made" beef extract.

Sept. 25th. From information, received through his brother, I learned that he was too weak this morning to leave home, but that the last application seemed to have checked the progress of the disease more than anything previously done for it. The carbolic acid spray had the effect of reducing the pain in the throat and ear, so that he did not require an opiate to sleep at night, but was compelled to use the spray nearly every hour during the day, and also whenever he awoke during the night. There was no change made in the treatment, as I had lost all hope of benefiting him by anything that I could do.

Oct. 10th. To-day I visited the patient at his house, because of the interest I had in this rare case, and found him much reduced in flesh and strength, having all the external appearance of speedy death. For the last two days he has not been able to speak aloud. Pulse a little over 100 per minute, small and hard. His appetite is good, but he soon wearies in his attempts at swallowing food, so that he does not at any time have his hunger appeased. He has continued pain in the throat and ear; sleeps the greater part of the day and night, always using the spray of the carbolic acid solution as soon as he wakes up, whether the sleep has been long or short. The patient readily gave me an opportunity to examine his throat. I found that the disease had extended to the right bicuspid, all of the incisors having dropped out, leaving the right cuspid very loose, and nearly unsupported. None of the teeth showed the least sign of decay or change of colour. The ulceration had extended upon the lower surface of the tongue on the left and in front, also nearly half away across the fauces. The destruction of the velum palati was so extensive, that, by throwing the head a little back, the posterior margin of the mouth of the left eustachian tube could be seen. With the aid of the pharyngeal mirror, it was observed that the disease had extended upon the septum nasi, the left inferior turbinated process, and the left half of the pharyngo-nasal cavity. By reversing the mirror, it was observed that fully half of the epiglottis, on the left side, was destroyed, and a part of the left vocal cord. The treatment of the case at this time and for a week past—except the use of the spray—was in the hands of the pastor of the church to which the patient belonged, who frequently attended to his parishioners when sick. It is needless to say that death soon terminated the patient's sufferings.

DENTAL HOSPITAL REPORTS.

DENTAL HOSPITAL OF LONDON.

Monthly Report of Cases Treated from May 1st to May 31st, 1873.

Extractions:—Children under 14, 398; Adults, 500	898
Under Nitrous-Oxide	220
Gold Stoppings	123
White Foil ditto	69
Plastic ditto	132
Irregularities of the Teeth treated surgically and mechanically	39
Miscellaneous Cases	196
Advice Cases	50
Total	1,727

Claude Rogers, *House-Surgeon.*

QUEEN ADELAIDE'S DISPENSARY.

Dental Report for 1872.

The Dental Department of this Institution completes the seventh year of its existence with the close of 1872, and may now be considered fully installed among the benevolent works here carried on; and insomuch as the continued appreciation displayed by the recipients of its benefits, together with the large numbers who, from time to time, avail themselves of our attention,—not only from this, but from adjoining parishes,—will testify to the urgent need there existed for its introduction; and we may congratulate ourselves that no institution of similar size can boast of greater progress than our own. The Report for the year presents but few features of interest, but on the whole may be considered favourable; although, in the aggregate, there is a decrease of cases upon the previous year, which is partly accounted for by the absence of the severe forms of Dental cases, embracing those of necrosis and tumours; while, at the same time, there is an increase of extractions and regulations of children's teeth. Of extractions we have no less a number than 997, showing an increase of 158 upon the previous year, whilst stoppings, scalings, &c., bring the total for the year to 1,063, and since the commencement of the department, to a grand total of 5,548. In submitting the foregoing Report, we cannot conclude without reference to the introduction of the Nitrous-Oxide Gas, mentioned in last year's Report. The subscriptions for that fund are now nearly sufficient to purchase the apparatus. It is needless to expatiate upon its merits as a safe and effectual agent for securing painless operations, although one calamity has recently overtaken its use; but that may be regarded as *nil*, when the large number of 64,000 times of its being administered in England alone can testify to its safety.

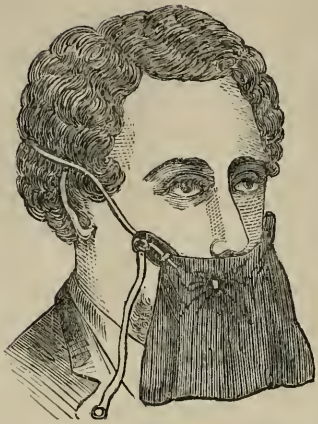
CHARLES WEST, L.D.S., R.C.S., Dental Surgeon, Queen Adelaide's Dispensary; Assistant Dental Surgeon, German Hospital.

TOOTHACHE—SYSTEMIC TREATMENT.

DR. A. L. CORY (CHICAGO MED. TIMES) "reports a new remedy for toothache. Being called upon immediately after the fire to extract some aching teeth, and not having the necessary implements, and most of the dentists having lost their instruments, he prescribed 50 grains of hydrate chloral, to lessen the pain and produce rest until he could obtain the necessary forceps. To his astonishment, in every case the ache not only promptly vanished, but failed to return. The doctor says he has now tried this plan in about twenty cases with quite uniform success."

Various anodynes will answer the same purpose. Among others, ionoform in one grain doses is a very efficient remedy for dental and facial neuralgia.—MEDICAL COSMOS.

NEW INVENTIONS.

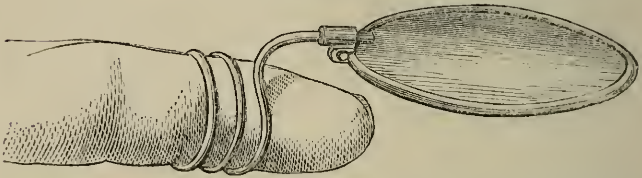


COGSWELL'S RUBBER DAM AND NAPKIN HOLDER.

This is a convenient and effective arrangement for holding the ends of the rubber up and back while operating. By passing the elastic around the neck, a napkin is conveniently kept in place so as to protect the lips and beard.

It is made by Codman & Shurtleff, of Boston, U.S.

DENTIST'S MAGNIFIER.



The above cut represents a new and very convenient form of magnifying glass for dentists. It is worn on the fore finger of the left hand, and supports itself in any position required, can be used in diagnosing, finishing fillings, serrating instruments, or for any operation where a strong magnifier is required, always supporting itself and saving the use of one hand.

This instrument is the design of Dr. Baxter, of Vevay, Ind., and is manufactured by Spencer & Moore, Cincinnati, Ohio.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

A full report of the last Meeting, held on the 9th inst., will appear in our number for July.

To Correspondents.

All Communications intended for the Editor should be addressed to the care of Messrs. Smith, Elder & Co., 15 Waterloo Place, Pall Mall.

All inquiries respecting Advertisements should be sent to George Butcher, 4, Crane Court, Fleet Street, E.C.

THE MONTHLY REVIEW

OF

DENTAL SURGERY.

No. II. JULY, 1873. Vol. II.

PRELIMINARY EXAMINATION IN ARTS FOR DENTAL STUDENTS.

The promoters of the alliance of Dental Surgery with the Royal College of Surgeons must view with great satisfaction the steadily, and, this year, largely increasing numbers of students who presented themselves for examination. It is especially noteworthy this year, as showing that the greater severity of the examination for the Dental diploma has had no deterrent effect; but, if we may judge from the increased number of students, has been rather an attraction than the reverse. Seeing this ready response by the junior members of the profession, to the endeavour of the College to raise the standard of the Dental diploma, we would urge upon the Council of the College a yet stronger effort to improve the position of Dental Surgery in connexion with their Corporation, by making a preliminary examination in Arts not optional, but compulsory. Many of those who are now pursuing their studies, have most wisely taken their certificates at one or other of the preliminary examinations that are available for the College, and it would be an immense benefit to the students themselves and also to the Dental profession, if such an examination were for the future made compulsory on the part of all those entering upon the curriculum required for the Dental diploma.

ODONTOMES.

(Traité des Tumeurs. Par Paul Broca.)

Odontomes Generally.

(Continued from p. 21.)

II.—*Anatomy and Physiology of Dental Bulbs.*

The dental follicles of man are composed of a membranous wall, in the shape of a pocket, having solid contents, which consist of two small bodies, and are known as,—first, the bulb, or ivory organ; second, the organ of the enamel, or germ of the enamel, also called the adamantine organ. The follicular wall (Fig. 5. f, f) does not form a perfect sac; it is a kind of purse, of which the bottom corresponds to the mucous membrane of the gum, and of which the neck (c c) situated opposite, at the bottom of the alveolus, or of the alveolar groove, is inserted circularly on the base of the bulb. This, therefore, occupies the deep extremity of the follicle by its base, which is originally its largest part; it continues across the neck of the follicle, with the subjacent vascular tissues. The rest of its surface, free from adherence, projects into the interior of the follicle, and the whole space which is comprehended between this inter-follicular surface and the walls of the bulb, is filled in man by the enamel organ (a). In the herbivorous pachyderms, such as the ruminants, the solipedes, &c., a third body, called the cement organ, is interposed between the wall of the follicle and the enamel organ, which envelopes it in the same way as it envelopes the bulb.

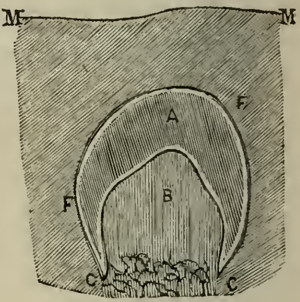


Fig. 5.

I divide the development of the teeth into four periods. This division, which will render my description more easy, will, besides, have the advantage of serving as a basis for the classification of the odontomes. I designate these four periods under the following names:—First period, embryo-plastic; second period, odonto-plastic; third period, coronary; fourth period, radicular *(radiculaire)*.

First Period, Embryo-plastic.—The bulb enters the cavity of the follicle as a sort of papilla, whose form indicates the future dental crown, and whose summit is surmounted with a number of nipple-like processes, equal to those of the cusps of this crown. At this period the bulb does not contain vessels or fibres. It is composed of an amorphous mass, lightly granulated, where are dispersed ovoid kernels 0·007$^{\text{mm.}}$ to 0·008$^{\text{mm.}}$ long, and rather less broad; grey, and resembling the fibro-plastic cells of the conjunctival tissue in the course of formation (*Vide* Fig. 6, c). The greater part of these cells have no nuclei, but towards the base of the bulb the number of nucleated cells becomes more considerable, and they already have the tendency to lengthen into fusiform or star-like fibro-plastic bodies,—a tendency which is especially manifested in the period following.

The enamel organ, much softer than the bulb, is likewise composed of an amorphous mass, enclosing fibro-plastic elements. Deprived of fibres and vessels, only owing its continuity to an amorphous gelatinous matter, the enamel organ separates itself quickly after death, and becomes quite liquid. It is this which has caused the belief that there was in the dental follicles a bed of liquid interposed between the bulb and the walls; but it is only a *post-mortem* effect. One can imagine that an organ so soft, so fragile, without vessels or fibres, would be liable to soften and to melt under the influence of diseases of the bulb or the follicle, and which,

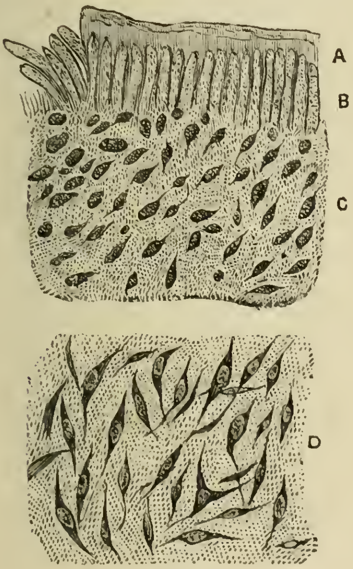


Fig. 6.

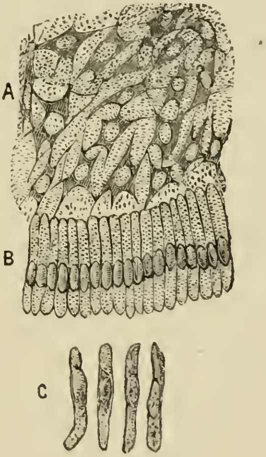


Fig. 7.

absorbed later by the vessels of the follicle, leaves in its place a closed cavity, susceptible of developing into a cyst. This is the origin of the dental cysts previously referred to.

The fibro-plastic elements of the organ of enamel consist of star-like or fusiform bodies, of which the angles terminate in filiform prolongations (see Fig. 7, A). Besides which, the superficial face of this organ is re-covered with a unique layer of pavement-like, epithelial cells, which clothe the internal face of the membrane of the follicle, and which may be constantly found upon the walls of the dental cysts.

In the period that I have just described, the odontogenous tissues possess, without doubt, characteristics which can be easily recognized under the microscope; but their elements do not yet offer special types. They do not absolutely differ from those which are met with in many other embryonic organs, and they must only be considered varieties of ordinary fibro-plastic or embryo-plastic organs.

This is why I thought I could designate the first period under the name of the embryo-plastic period.

The special elements which are the germs of dentification not being yet formed, a disease occurring at this period can cause the odontogenic tissues to lose the property of evolution which normally devolves upon them. The odontomes also, whose advent commences at the embryo-plastic period, have no tendency to dentification; their tissue only undergoes the evolution common to the ordinary embryo-plastic tissues. It can remain in the fibro-plastic state or pass to the fibrous state, and this is the origin of the first variety of odontomes, to which I attach tumours of the jaws, described by Dupuytren under the name of fibrous bodies and fibro-cellular tumours of the jaws. I shall describe them as embryo-plastic odontomes.

Second Period, Odonto-plastic.—This is characterized by the advent of two special elements, which precede and cause the formation of the definite tissues of the tooth. It is then that may be seen, in two distinct rows, the dentinal cells and the enamel cells. The dentinal cells, that is to say, the cells of the ivory or dentine, constitute a unique, continuous, and perfectly regular row in the superficial layer of the bulb. They are lengthened cells, cylindrical or prismatic, $0{\cdot}02^{\text{mm.}}$ to $0{\cdot}04^{\text{mm.}}$ long, and $0{\cdot}007^{\text{mm.}}$ to $0{\cdot}01^{\text{mm.}}$ broad, and provided with a scarcely apparent nucleus, which can be seen by the action of glycerine. This ovoid or spherical nucleus is almost as large as the cells. The dentinal cells parallel to them, and directed perpendicularly to the surface of the bulb, show a disposition which resembles the rods of the retina, or the cylindrical cells of the epithelium (Fig. 6, *b*).

The row of dentinal cells forms a continuous layer to the surface of the bulb; nevertheless, it remains separated from this surface by a thin layer of amorphous matter, which forms the most external covering of the bulb, and which has been designated, rightly or wrongly, as preformative membrane (A). The preformative membrane and the row of dentinal cells constitute together the cortical layer of the bulb. The remainder of the bulb takes from that time the name of dental pulp, submitting to modifications of structure of which the principal is vascularization. The little capillary vessels penetrate to the base of the bulb, and are prolonged in the pulp, but do not reach its surface. At the same time, the number of the embryo-plastic nuclei which pass to the fusiform or starry state continue to grow, especially towards the base of the bulb, and already the fibro-plastic bodies provided with filiform prolongations commence to arrange themselves so as to give birth to a small quantity of connective tissue which shows itself, especially round the vessels. Finally, although dentification, properly speaking, cannot be said to have begun, and although the deposits of mineral matter is only effected with regularity in the period following, there may sometimes be found in parts of the pulp adjacent to the cortical layer, small dental bodies (*grains dentinaires*), to which we shall presently refer.

Whilst the development of the dentinal cells is going on, there appears on the deep side of the enamel a layer of special cells which lie on the external side of the preformative membrane, and which are called the *enamel cells*. Only $0·003^{\text{mm.}}$ to $0·005^{\text{mm.}}$ broad, and six or eight times longer, rectilinear, nearly prismatic, pretty regular, and closely pressed one against the other, they recall rather the disposition of the rods of the retina than the dentinal cells. The odontogenic covering possesses besides all the elements which contribute to the formation of the definitive tissues of the tooth. From the moment when the two layers of cells, dentine and enamel, exist, dentification has virtually begun. It can be retarded by pathological circumstances, but, at least when the layers in question are not destroyed or deeply disorganized, it must be effected sooner or later. The odontomes which occur during the odonto-plastic period, and which I shall call odonto-plastic odontomes, differ from those of the preceding period by the property they possess of lending themselves, with more or less regularity, to the phenomena of dentification, and can besides occur at extremely various epochs.

There are two periods in their evolution—one constant, during which time are constituted the soft tumours which were a long time described under the name of osteo sarcoma of the jaws, and the other eventual, during which time they become the seat of a dentification which generally finishes by totally usurping it. The only dental tissues which can be formed in these tumours are the ivory, which is constant, and the enamel, which, always less abundant than the ivory, can be formed defectively. As to the cementum, or osseous dental tissue, the conditions favourable to its development are only realized in the fourth period of the evolution of the bulb; it cannot appear, at least in man, in the odonto-plastic odontomes. But it can in the herbivora. I have already said that the dental follicles of these animals contain, from their commencement, a particular organ, which encloses the organ of the enamel, and which is called the organ of cement. This body, which receives direct the vessels of the membrane of the follicle, can be hypertrophied either singly or at the same time as the bulb; and when these odontomes begin dentification, they can enclose a large quantity of cementum; they can even be exclusively composed of it. We shall name them *cementum odonto-plastic odontomes.*

Description of Fig. 5.

Section of a Dental Follicle in the Human Embryo.

MM Mucous membrane of the gum.
EF Wall of the follicle.
CC Neck of the follicle, embracing the base of the bulb.
B The bulb with the base continued with the subjacent vascular tissues.
A The enamel organ.

Description of Fig. 6.

Structure of the Dental Bulb in the Odonto-plastic Period. Second Inferior Molar of a Child born prematurely. 400 diameters.

A External amorphous layer, or preformative membrane.
B Row of dentinal cells.
C Dental pulp formed from embryo-plastic nuclei.
D Another part of the pulp near the base of the pulp, the embryo-plastic nuclei lengthened into fusiform bodies. Some are like stars.

Description of Fig. 7.

The Enamel Organ and the Enamel Cells in a Human Embryo of Three months. 500 diameters. After Robin and Magitot, in the JOURNAL OF PHYSIOLOGY, by Brown-Séquard, 1860, Pl. XII. figs. 5 and 8.

A Embryo-plastic starry body, composing the web of the tissue fitted for the enamel organ.
B Row of enamel cells.
C Isolated enamel cells.

(To be continued.)

ERUPTION OF THE TEETH.

By Herr Robert Baume.

(Vierteljahrsschrift.)

(Continued from p. 18.)

I have already previously noticed that in isolated abnormal cases the tooth can be erupted without any root formation. But this not only happens in exceptional cases, but also in the molars of the upper jaw in their normal condition. In the macerated upper jaw of an individual of about two years, the first permanent molar lies in the tuberosity, and in a reversed position, which may be described in the following manner:—

The distal surface is upwards, the mesial surface downwards and the masticating surface lies towards the back, therefore, turned towards the pharynx. When the tooth takes its proper place for eruption, the whole crown must make a quarter turn, so that the masticating surface must lie downwards; besides this, the whole crown must descend somewhat deeper. In this way the first molar travels over about [ca.] 1 centimètre.

In examining a macerated upper jaw of the end of the third or beginning of the fourth year, there will be found the first permanent molar, almost in the proper position for eruption; it has, therefore, undergone, between the second and third years, a notable change of position with the accompanying movements.

On closer examination of the tooth, it will be found that the root formation has not yet begun, and that the crown is not yet entirely ossified. In the fourth year of life the second permanent molar takes a similar position to that of the first permanent molar in the second year. It lies in the tuberosity of the jaw, which is lengthened towards the back, and takes this especial position long before its eruption. A similar thing again occurs with the wisdom teeth.

Every one of the three permanent molars must, therefore, in the course of its development, undergo movements in two directions before its eruption. It must next make a quarter turn, so that the masticating surface turned towards the back may lie downwards. It must, therefore, on the whole, descend. These movements take place without root formation.

In such a case, if a forward movement of the tooth, through growth of the root, should be thought of, great embarrassment would arise, as there is not the slightest trace of a root to be seen. At all events, the observation of these facts will give the most perfect evidence that the growing fang does not push the tooth out of its alveolus, and has nothing to do with the change of position.

On examining a macerated upper jaw in the second year of life, therefore, in the time when the first permanent molar is still in the tuberosity, there will be found upon the above-mentioned tooth a very thin, slight layer of cancellous bone. In the fourth year, when the tooth has taken its proper place for eruption, instead of the former thin layer, may be seen a proportionally thick layer. This cancellous structure has lengthened considerably downwards, as in its development it has gradually filled up the tooth space, pushed it forwards and downwards. At the same time we find in the alveolus a lamella, and my deduction must for the present be accepted, that only spiculæ of the cancellous structure can appear there.

The lamella is pierced by smaller or larger openings. The microscopical observation of these lamellæ shows that before all things a notable widening of the Haversian canal has taken place. It is not a young bony structure, but, as the widening of the pulp cavity shows, a comprehensive resorption. The resorption of the alveolar lamella apparently follows the pulp, which is thus gradually pressed into the alveolus. With the absorption of the old bone, however, a new formation of bony texture goes on, by which the alveolus is gradually narrowed. We find the young bone principally on the upper surface of the lamella. This new formation takes place in no way from periostal impressions, but from ossification of the fibrous texture which has pushed forward out of the pulp through the alveolus. What has especially led me to the conclusion that the growth of the alveolus proceeds from inwards and not from periostal thickening is a condition which is especially striking by microscopical observation. We find nearest the upper surface of the less porous lamella a young bony structure, which is not spread on the upper surface of the alveolus as a layer, but may be traced in many places in the noticeably widened pulp space.

With reference to the well-known fact that the marrow plays an important part in the formation of bone, I consider in this especial case that in the previous granulation the pulp has looked after the formation of bone, otherwise the widening of the Haversian canal of the old bone as the appearance of resorption with partial bony formation in the pulp space has no sense. Thus it will be perfectly clear that singly and alone the fibrous texture of the pulp enters the alveolus through the bone, through continual increase, pushes the tooth out of the jaw, and through following ossification in the deepest layers, narrows the alveolus.

Self-evidently, granulation must precede ossification. The tooth, therefore, is primarily pushed from its place by the growth of fibrous structure; only then can the bone have a free place. The narrowing of the bony alveolus is, therefore, not the cause, but the consequence of the forward movement of the tooth.

I noticed previously that at the time when the molar is taking its position for future eruption, there may be observed a development of cancellous bony structure in the portion of the upper jaw lying above it. During this increase and spread of cancellous structure the tooth is gradually pushed about [ca.] 1 centimètre downwards. In proportion as this structure descends is it absorbed above by the neighbouring layers of the antrum. The final resorption of the remaining cancellous structure is only perfected when the tooth has taken its proper position for eruption. Through the new formation of bone on the tooth, and the resorption in the neighbourhood of the antrum, the situation of the latter must become enlarged as the bone disappears. When the tooth has taken its proper position for eruption, so has the jaw, in whose tuberosity it first lay, grown almost the length of the crown of a permanent molar, mesial distal measurement—therefore nearly 1 centimètre. It has, therefore, undergone a real lengthening of the back portion.

The pushing downwards of the molar is not a sufficient explanation of the growth of the jaw. I sought other reasons, and have found a very important point. I saw, namely, in several jaws, in the hinder surface in the neighbourhood of the molar, above the tuberosity, and at the back of the zygomatic process (upper jaw), a fine splintery structure, apparently bony; I immediately thought of periostal thickening. This fine splintery structure could be easily removed from the bone lying beneath. There was, therefore, no firm connexion between the old and the young substance. The microscopical observation of small portions of this layer confirms the previous supposition, and shows a substance with all the characteristics of young bone, namely, very wide pulp spaces, no clear layers of lamellæ, the small bony bodies, round or oval, without shoots, and their arrangement apparently irregular.

The above facts plainly show the length of time during which a continuous layer of new bony substance is provided by the periosteum at the hinder part of the upper jaw above the tuberosity. The natural results of this is a growth of length. Increase of the jaw through periostal thickening follows only in that portion above the tuberosity. In the neighbourhood of the tuberosity growth takes place under other conditions, that is to say, simply that the tooth is pushed down on account of the growing pulp. The space which the tooth formerly had inside receives now the cancellous bone, which has arisen from the ossification of the fibrous structure of the pulp. The cancellous structure in that part that lies near the antrum is at the same time removed on account of the gradual resorption, and so there arises a hollow cavity, in other words, a widening of the antrum of Highmore. The periostal thickening of the young bony substance goes hand in hand with the growth of the fibrous texture from the pulp, by which the tooth is pushed downwards; the turning of the crown of the tooth can only follow the lengthening of the jaws. The growth of the jaws in the direction mentioned has its cause in the formation of the bone from periosteum and also from pulp.

Similar events occur in the development of both the other molars. Towards the end of the third year the second molar lies in the tuberosity. Towards the end of the fourth and beginning of the fifth year, it is gradually pushed down, and undergoes similar changes to those of the first molar. When the second molar has assumed its position for eruption, the jaw has increased the length of the crown of a molar in its hinder part. The same thing occurs later with the wisdom teeth.

(To be continued.)

MEMOIR UPON CYSTS OF THE JAW.

By Dr. E. Magitot, Lauréat de la Faculté, de l'Académie de Médicine, &c. Translated from the Archives Générales de Médicine, by Thomas C. Minor, M.D.

(Cincinnati Lancet, Jan. 1873.)

(Continued from p. 37.)

Coming, finally, to the present time, we will bring to the support of our theory, in addition to our personal observations, three cases altogether demonstrative. One of them is relative to an anatomical specimen in M. Fuzier's collection. It is a cyst which invaded, distended, and almost entirely hollowed out the whole superior apophysis of the right inferior maxilla, in a man aged twenty-five years. The subject who suffered from this tumour having died of yellow fever in the Vera Cruz hospital, M. Fuzier, in making his autopsy, found this specimen, which he was kind enough to place at my disposal. The wisdom tooth was certainly the cause of this cyst. It lays inclosed at the base of the coronoid apophysis, and it seems clearly evidenced, notwithstanding the dry condition of the specimen, that the cyst had for its origin the follicle of this same tooth. The second case was observed by Prof. Verneuil, at the hospital Lariboisière (Voy. A. Barbat, 'Thèses de Paris,' 1872, p. 46). It is one of the most complete and most demonstrative. The patient was a man aged twenty-nine, who suffered for more than a year from a hard, indolent tumour, the size of a small orange, situated at the right side of the inferior maxilla. M. Verneuil having been so kind as to invite me to see this patient, I agreed with this eminent surgeon in a diagnosis of the lesion, as being *a cyst of the dental periosteum.* The sac was opened, and the finger, introduced into the cavity, met a denuded root dipping down into the cyst. Besides, this latter having been extracted, a communication was recognized between the alveola and the cavity of the tumour. This was so evident, that a wire was passed from one into the other, in order to be knotted on the alveolar border. The demonstration of the periosteal nature of this cyst was completed by the examination of the root itself, which we found free, furrowed, and deprived, that is, all the portion bathed in the liquid, of its periosteum, which most evidently formed the wall of the cyst.

A third observation, that we owe to the kindness of our friend, Dr. J. Moreau, is not less complete nor less demonstrative than the preceding. This was the case of a young man aged twenty-five years, who suffered from a periosteal cyst in the superior maxilla. The sac opened, permitted the recognition of the presence of the root of a tooth dipping down into the liquid, and denuded of its periosteum. A cure was obtained, however, in this case without extracting the tooth.

Finally, my personal observations, of which some already date back several years, are seven in number, which, added to the case I published in 1860, constitute a total of eight examples of maxillary cysts. Three of them were in nature *follicular*, and at different degrees of its evolutions; the other five were of the *periosteal* kind. These are those cases which, joined to the analysis and criticism of the relations which are met in the science, constitute the elements of demonstration and the proofs in support of my theory. My prejudice in regard to this question of cysts of the jaw is besides not recent, and already, some years since (Essay upon the 'Pathogeny of Cysts and Abscesses of the Jaw,' Gazette des Hôpitaux, 1869, p. 245, *et seq.*), I had, in a short magazine article, sought to establish my opinions in regard to this subject.

I shall try to develope it to-day, and I have the firm conviction that henceforward all cysts which are met in the maxillæ, and which shall be observed in a spirit deprived of all prejudice, will inevitably enter into one of the species whose anatomo-pathological conditions and mode of development I intend to show.

II. *Definition of Cysts of the Jaw: their Nature, their Classification.*—We must give the name of *maxillary cysts* to all membranous pouches, closed in all parts, pathologically developed in the maxillary substance, distinct from the ambiant tissues, and containing principally a liquid of variable density, with or without solid accessory parts.

By this definition, which is only an application of the general definition of cysts to particular cases to which it is applied, we intend to eliminate immediately all encysted tumours of the jaw, as *dental exostosis*, fibrous tumours, &c., for reason that the various productions of the same order which, originally developed at a point adjoining the maxilla, might consecutively invade the tissues of the latter. Such are, for instance, the cysts of the maxillary sinus, which could not be by any means included among cysts of the jaw. The sinus, in fact, should be considered as a dependence of the nasal fossæ; its communication with the latter, by the orifice of the middle turbinated; the nature of the membrane lining it; the composition of the mucus, and the structure of the glands secreting it, are sufficient proofs of it. There are, at the same time, glands which become the seat of special cysts of this cavity, the *mucus cysts*, described by M. Giraldes.

The same remark still applies to certain cysts of the buccal mucous membrane, situated either at the vault or velum of the palate, or at the roof of the mouth, cysts ordinarily formed at the expense of the salivary gland, and capable, by their ulterior development, of pushing into and lodging in or invading one or the other maxilla. Certain productions situated under the periosteum of the maxillæ, and designated wrongly by the name of cysts, should still remain absent from our description. (Such are the cases reported by Ancelet, Souvier, Jacquin, and Meilhac, Gazette des Hôpitaux, 1859, p. 119, *et seq.*) These are simple effusions of inflammatory nature, consecutive to particular lesions of the teeth or of the alveolar borders. We may finally mention, in this connexion, the hypothesis of the seat of certain cysts of the jaw in the dental canal and its vessels. We shall see, further on, that this assertion rests on no case observed, and that it must be absolutely repelled. The cysts of the maxillæ, considered from the point of looking at their nature, should belong to a single class of lesions—the alterations of teeth in the follicular state or in the adult state. We formulate this proposition thus:

All spontaneous cysts of the maxillæ are of a nature essentially and exclusively dental.

This assertion will appear, without doubt, very absolute at first sight; but, if we look without prejudice at the series of cases collected up to the present day, we are struck from the first by this circumstance, that the greatest number of observers mention an evident relation with the dental system. Many of them even establish, in a precise manner, the casual circumstances with the various conditions of the teeth, and if a certain number of cases should be overlooked from this point of view, it is because they fail in the precision and rigour which should belong to an authentic observation. These latter must not, consequently, be taken into serious consideration.

The theory of the dental origin of certain cysts of the jaw is not, besides, wholly new. Without here recalling the cases already mentioned by Delpech, Marjolin, Forget, Guibout, Dolbeau, &c., M. Broca, among modern authors ('Traité des Tumeurs,' 1869, tome ii. p. 35), affirms that the very greatest majority of these cysts are due to a trouble of evolution in the *dental follicle*, and he adds that any other species of cysts, *progenic* cysts, for example, are not met in the jaws. This affirmation, we see, however, is not exact, and we shall describe true *progenic* cysts likewise of dental origin—the *alveolo-dental cysts of the periosteum.* A different opinion, however, is given in a remarkable work which will appear at the same moment this article goes to press. It is the article 'Pathology of the Maxillary Bones,' by M. F. Guyon ('Dictionn. Encyclopéd. des Sciences Médicales,' 2nd series, tome v. p. 414). The author divides cysts of the jaw into *dental cysts* and *non-dental cysts.* Among the first are easily found cysts of the follicle and those of the periosteum. Among the second are described cysts of the sinus and certain multilocular cysts of an undetermined nature. We shall discuss further on, *à propos* to its *pathogeny*, the opinions enunciated in this article, by seeking to establish that a multilocular cyst is likewise explained by the same origin and after a particular process.

We hope, then, to convince the reader of the exactness of this doctrine, that *cysts of the jaw have for their origin some derangement of the dental system.* The only exception to this rule is that of *perigenic cysts*, developed around a foreign body. We are under obligations to M. Maisonneuve for an observation of this sort ('Clinique Chirurgicale,' 1863, tome i. p. 594). It is necessary, besides, to consider that the jaws are, truly speaking, only simple supports intended to contain the teeth, and that the latter, which are the fundamental organs of this region, are on their part, from a physiological point of view, the centre of phenomena of evolution which occupy the greater part of life, and besides may become pathologically the seat of numerous and various alterations, which immediately affect the tissues of the jaw. In fact, in infancy, the dental evolution, commencing during intrauterine life, provokes and brings about a considerable functional activity in these tissues. These phenomena are prolonged up to an adult age by the coming out of the last teeth. They correspond to the intrafollicular development of the organ, a development whose accidental operations give rise to the numerous and varied series of dental anomalies. Among these anomalies, there are several we must invoke in the pathogeny of one of the two sorts of cysts, the *follicular cysts*. These are anomalies of nutrition, situation, and of the epoch of development. Follicular cysts may, then, be considered as recognizing a cause purely teratological, a circumstance which connects them sometimes, from the point of looking at their nature and their anatomo-pathological surroundings, with a group of alterations of a neighbouring order, which were so remarkably studied by Broca—*odontoid tumours*. We shall see at the same time that certain lesions of the maxillæ are in some way intermediate to the two nosological species, and participate at the same time as cysts and odontoid tumours. Several cases met in the science are of this sort.

When the phenomena of follicular evolutions are accomplished, of which the termination is represented by its *eruption*, the tooth has arrived at its adult state, and the only alterations that it can undergo are of a pathological nature; traumatisms, organic lesions, caries, various affections of the periosteum, &c.; troubles among which are arranged the second class of cysts—*cysts of the dental periosteum*.

Outside of these two sorts, cysts of the dental follicle and cysts of the periosteum, we believe that there exists no other mode of origin, except perigenic cysts. The pretended hydatid cysts rest on no authentic case, notwithstanding some claims in this regard, which fail completely in proofs. (M. Davaine, in his remarkable 'Traité des Entozoaires,' cites an example of hydatids of the jaw.)

After these considerations, it is easy to foresee what will be my classification of cysts of the jaw.

A.—In a first variety, we shall describe the *progenic* or preexisting *cysts of the dental follicle*. They shall be divided, for the purpose of seeing their pathogeny, into—

1. *Cysts of the embryo-plastic period*, that is to say, coming on during the follicular period, anterior to the genesis of the ivory and enamel.
2. *Cysts of the odonto-plastic period*, answering to the epoch when the first rudiments of the crown appear in the substance of the follicle.
3. *Cysts of the coronary period*, that is to say, those which have arisen in the follicle at the moment it has perfected its dental crown.

The cyst will be simple if it is developed in a follicle occupying its normal seat; heterotopical if this follicle has undergone displacement, an anomaly of situation, and if it should be or not be supernumerary.

The cysts of this first category should still be distinguished according to their contents, of which we shall finally make mention, that is to say, into *serous*, *meliceris*, and *caseous cysts*.

B.—In a second variety, we shall describe *neogenic* cysts of the jaw, that is to say, those which are formed outside of a preexisting cavity. These cysts are those which are produced below the dental periosteum, raising up from the surface of the tooth, to which it normally adheres. The wall of the cyst is formed by the periosteum itself, which, from thence detached, undergoes besides a distension, with hypergenesis of its elements, in a way to form the total extent of the cystic sac. These cysts should be called *subperiosteal* or *periosteal*. I prefer the latter term.

I shall make, besides, another remark, which shall be further developed: it is that, from a purely pathogenic point of view, cysts of the follicle and those of the periosteum have definitely for a sac only a single and same membrane, the walls which inclose the follicle during the embryonic or infantile period becoming, owing to the progress of the evolution, the alveolo-dental periosteum, which, at the moment of its eruption, presents and fixes itself at the radicular surface of the tooth.

The cysts of this second variety, owing to their contents, into *serous cysts*, *meliceric cysts*, and *purulent cysts*.

C.—A third variety of cysts of the jaw is represented by *perigenic* cysts, that is to say, those which have for a centre of evolution a foreign body, a ball, for example. These are, properly speaking, foreign bodies in the jaws becoming encysted.

I give, in conclusion, a table, in which cysts of the jaw are separated and classified:—

TABLE OF CYSTS OF THE JAW.

1st Variety.—Progenic; follicular cysts	Simple or Heterotopical.	Embryo-plastic period.	Serous. Meliceric. Butyric.
		Odonto-plastic period.	Serous. Meliceric.
		Coronary period.	Serous. Meliceric.
2nd Variety.—Neogenic; periosteal cysts containing (with or without cholesterine).			Serous. Meliceric. Purulent.
3rd Variety.—Perigenic; encysted foreign bodies (case of Maisonneuve's).			

THE BEARING OF THE DEVELOPMENT OF THE JAWS ON IRREGULARITIES.*

(Remarks addressed to the Alumni Association of the Philadelphia Dental College, Feb. 28, 1873.)

By Charles S. Tomes, M.A.

(Dental Cosmos.)

Gentlemen,—Having only last night been requested to say a few words before you, it has of course been impossible for me to prepare a paper, nor can I hope, without preparation, to say much that is not already perfectly familiar. However, shortly before my departure from England, I had the good fortune to see a case which has considerable practical interest, and at the same time serves to illustrate certain points in the development of the jaw which are hardly sufficiently kept in mind by the practitioners of our specialty. I propose thus to relate this case, prefacing it by some remarks on the manner of development of the jaw,—a matter which is so frequently lost sight of in the treatment of irregularities.

If we take a jaw, selecting the lower, as being, from its isolated position, more easy to study than the upper, and draw along it an imaginary horizontal line a little below the level of the mental foramen, we shall have divided it into two portions, the life histories of which differ very markedly. Below the line we have a jaw, the functions of which might be briefly described as "muscular"—that is to say, it gives support to muscles and other soft parts concerned in such operations as mastication, deglutition, speech, and respiration; whilst above the line we have the "alveolar" portion—that is to say, a bone subservient to the development and subsequent fixation of the teeth.

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* At the time when the above remarks were made, I had not seen Dr. Isaiah Forbes's paper 'On Irregularities' which appeared in the Missouri Journal for February, in which that author, though using a different line of argument, has arrived at substantially the same conclusion.

In the history of their development, these two portions contrast very strongly, the lower or muscular portion possessing a permanency and constancy that is in no way shared by the alveolar borders.

In the young fœtus, that which lies below the line can hardly be said to exist; and this is fully accounted for by the fact that, inasmuch as the functions of deglutition, respiration, &c., are not as yet performed, there is no need of a strong bony bar to give a *point d'appui* for muscular action. But immediately before, and for a considerable period after birth, the growth of this part of the maxillæ goes on with great rapidity, so that, by the time the child has attained the age of eight or nine years, it has attained to dimensions (as far as depth is concerned) nearly approaching those of an adult. And once having been deposited, there the bone persistently remains, only wasting slightly in old age, when the loss of the teeth has entailed a diminution in the activity of the muscles attached to it.

If we now direct our attention to the life history of that which lies above our line, we shall find it to be much more varied. In the early fœtus, where the principal, one might almost say the only, function discharged by the maxillæ is the protection of the developing teeth, we find the jaw to consist almost wholly of this, to the exclusion of the other portion. It grows up in relation to the temporary teeth, and, when the period for their eruption arrives, is in great part removed by absorption to allow them to escape from their crypts. Then deposition preponderates over absorption, and bone is built up around the necks and roots of the temporary teeth. Again, when the period arrives for the permanent teeth to come down, the "alveolar" portion is once more destroyed, the teeth are erupted, and then new bone deposited around their necks and roots.

Thus, in the sockets of the permanent teeth there probably does not exist one morsel of bone which had ever formed a part of the alveolar supports of the temporary teeth; that has been all, or for all practical purposes all removed by absorption. Now the contrast to which I have alluded as existing between the life histories of these two portions of the jaw is this : the one (below the line) is steadily progressive in its development; when once formed, it is never removed, and its development is wholly independent of the teeth, or, to speak with absolute precision, is dependent on the teeth only in so far as they are accessories to the act of mastication ; whilst the other (above the line) has been formed and removed, over and over again, so that it has none of that stability and fixity which belong to the lower half of the jaw. In fact, it is wholly subservient to the teeth, and when these are lost in old age it entirely disappears.

And the point to which I am coming, and upon which it is impossible to insist too strongly, is this : teeth when they are erupted do not come down and take their places in a bone already prepared for them; on the contrary, that which is there to start with is absorbed, and the bone in which they are ultimately implanted is built up around them, no matter what position they may assume subsequently to their eruption. And the inference to be drawn from these facts is tolerably obvious: namely, that premature extraction of the temporary teeth is perfectly unable to be the cause of contraction of the jaw. For, unless the bony bar which lies below our imaginary line be distorted, it matters very little indeed what happens above it, so long as the permanent teeth meet with no obstruction during their exit from their crypts.

A case which serves to exemplify this has occurred in my father's practice, and this I will now proceed to relate. The temporary teeth had all become carious shortly after their eruption, and alveolar abscess had occurred around many of them. The constant suffering attendant upon this state of things had so damaged the child's health that its very life was considered to be in an extreme degree precarious, though its condition was not at that time attributed to the teeth. However, the loss of sleep was obviously so far aggravating the mischief that my father was consulted, and advised the extraction of some of the worst of the teeth. This was done, and marked improvement followed, but the state of the remaining teeth was such that constant toothache soon recurred, and, the child having been placed under choloform, all the remaining teeth were removed. From that moment the general health mended, and from being a sickly child not likely to survive, the patient has grown up into a healthy, vigorous young lady. I am speaking from memory, and, being without notes, amun able to be certain of the exact age at which the operation was done. I believe it was before the eruption of the first permanent molars, but if it was not it was certainly before the eruption of any other permanent teeth.

The mouth was then left edentulous (or at all events with nothing in front of the first permanent molars), and yet, so far from contraction having taken place, the lady now presents an unusually regular and well-developed arch.

Now the case is very instructive because it shows very plainly that contraction of the jaw is by no means a necessary sequence of early removal of deciduous teeth, but that, on the contrary, every single one may be removed, and yet the jaw become of full size and the teeth be arranged with perfect regularity. I am of course unable at this moment to give references to recorded cases, but I will ask you to believe me when I say that a good many cases clearly exemplifying this same entire absence of contraction after the removal of two or three contiguous deciduous teeth have been put upon record.*

How it happens that the removal of deciduous teeth or anything else of injury which the surgeon's art may do to the alveoli of the temporary set does not materially affect the disposition of the permanent teeth has, I venture to think, been already explained. It now only remains to briefly investigate the forces which ordinarily bring about the regular arrangement of the permanent teeth.

When a tooth is first erupted, its socket is widely opened, so that it is capable of assuming a wide range of position, and in a dried skull would fall out. As is familiar to every practitioner, very slight obstacles, such as a little fragment of a root of a deciduous tooth, will serve to deflect a growing tooth at the period of its first eruption ; but, provided no obstacles exist, two very competent forces are constantly at work to press it into its regular place. Along the outside of the dental arch the muscular structures of the lips and cheeks are perpetually exercising pressure perfectly symmetrically, and on the inside the tongue is with equal persistency doing the same thing. Now if we imagine a plastic material placed between the tongue and the lips, it cannot fail to be moulded into the form of a regular dental arch, and this is precisely what happens with the mobile, freshly erupted teeth; and should it chance that an individual tooth becomes deflected by some obstruction, so that it stands outside or inside its neighbours, it will obviously come in for more than its due share of pressure, and, so soon as the obstruction is removed, will be pushed into place. And as the muscular action of the tongue is more powerful than that of the lips, a tooth which stands inside the arch is reduced to its proper position more quickly than one which lies outside. There is, I believe, no such thing as a natural tendency towards the assumption of the regular form in a dental arch; the physical forces at work, namely, the lips and tongue, are amply sufficient to account for all the phenomena observed ; and explanations based upon such a tendency fall, like references to " vital force " as an explanation of physiological phenomena, into the category of mere forms of words, calculated to cloak our real ignorance.

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* Mr. Cartwright (TRANS. ODONT. SOC., Vol. IV., 1864, p. 132) has given several very excellent examples of this complete absence of contraction after the removal of temporary teeth. In two instances, the lower central incisors, which were erupted at birth, were at once removed, on account of their injuring the mother's nipple; their space was not occupied by the laterals, nor did any crowding ensue in the permanent dentition.

A case is quoted, from Mr. Martin, of Portsmouth, in which no contraction resulted from the removal of most of the temporary teeth, and figures are also given of two jaws (Figs. 7 and 8) in which, though the temporary teeth have been removed early, there is ample space for the permanent teeth, which are not yet erupted.

I have been much surprised to find that Dr. Foster Flagg (DENTAL COSMOS, May, 1873) has recently strongly condemned the removal of deciduous teeth, even in those cases in which, to my judgment, it appears that their removal is most clearly indicated; but after a most careful perusal of his paper, I am quite unable to find the data on which his conclusions rest. The dictum that deciduous teeth are never to be removed, except under very rare combinations of circumstances, is merely reiterated over and over again, being regarded either as a truth so obvious as to require no demonstration, or, as it rather appears, as an article of faith; in other words, of belief without evidence.

An excellent example of the apparently slight force which will determine the position of teeth is afforded by the models of a case presented to the Odontological Society by my friend and colleague, Mr. Turner, in which the whole alveolar border of the one side had been greatly bent inwards by the thickening of the soft tissues of the cheeks. No definable tumour was present, and the cheek was so soft that the finger introduced into the mouth sank into it, the sensation conveyed being that of touching jelly ; Mr. De Morgan, under whose care the case was, considered it as a hypertrophy of the mucous membrane. Yet, notwithstanding the extreme softness of the tissue, it was competent to effect excessive distortion of the alveolar border.

Certain of the cases known as V-shaped contracted jaws likewise illustrate the power of the pressure of the lips and cheek to modify the position of the teeth, for it will generally be found that this malformation is associated with greatly enlarged tonsils, which necessitate breathing being carried on with the mouth open. Now, as every one can easily verify upon himself, the effect of the mouth being held open is to increase the tension of the soft parts about its angles, and the result of the increased pressure is to bring about a bending inwards at the corresponding point, *i. e.*, the bicuspid region. At the same time the median portion of the arch escapes the controlling pressure which would have been exercised by closed lips, and the effect of this is traceable in the excessive prominence of the median pair of incisors, and also in their oblique position, which makes them correspond with the form assumed by the inner surface of the lips when the mouth is open.

The association of this form of contracted jaw with congenital idiocy, as well as some other considerations, lead me to infer, as I have elsewhere stated ("On the Developmental Origin of the V-shaped Maxillæ," MONTHLY REVIEW OF DENTAL SURGERY, June and July, 1872), that the contraction of the base of the jaw is due to causes in operation from a very early period; but the agency of the lips and tongue is that which determines the position of the teeth themselves. It would be impossible for me to elaborate the subject at this moment, and enough has perhaps been said to point out the general drift of the question under discussion, though I fear that the lack of time to prepare myself to address you has rendered my meaning more or less indistinct, so that I must appeal to your indulgence for many omissions and many more obscurities.

REPORT ON MATERIA MEDICA AND THERAPEUTICS.

Adolphus on Hydrate of Chloral as a local Anæsthetic.—Dr. Joseph Adolphus (EDINBURGH MEDICAL JOURNAL, from ST. LOUIS MEDICAL ARCHIVES) says: "Hydrate of chloral now takes its place in the materia medica as one of the greatest and most valuable aids to the physician. Thirty grains of the hydrate dissolved in forty grains of pure distilled water, make a drachm of saturated solution of the salt. The pure hydrate rapidly dissolves in vegetable or animal oils, and I have frequently seen it produce positive anæsthetic impressions on the outer parts of the body when thus applied. A usual prescription with me for external pain—application for relieving pain—is, chloral three drachms, olive oil two ounces: mix well in a mortar. Another very efficacious and satisfactory formula is to dissolve camphor in four times its weight of chloroform and then add to every four parts of this one part of chloral. This makes a very valuable external application, and frequently affords prompt relief. I have found also that chloral will unite with camphor and form a liquid. Thus, when camphor is reduced to the powdered state, by adding a few drops of alcohol to the gum and rubbing it up in a mortar, an equal weight of chloral added to it will liquefy the whole, but they must be kept closely corked in a bottle. This liquid will dissolve quinine to a large extent. I have used this both in and outside; and it has merit enough to warrant my referring to the compound. I have used this in several cases of severe inflammation of the outside; and in two cases of carbuncle, where the compound was painted on the swelling, great relief was obtained. In one case, the whole concern was aborted. A medical friend, while suffering from an agonizing neuralgia of the face, asked me to do something to relieve him right away. I applied this stuff to his face, and in a very short time he was comparatively free from pain. As I have said above, it is a valuable local anæsthetic. Chloral will dissolve freely in glycerine; so will chloroform. This latter will make a complete union with three times its bulk of glycerine, and I have for some time made an excellent chloradine by mixing two ounces of chloroform with six ounces of glycerine (both by measure), and to every drachm adding one-fourth of a grain of morphia."—The London Medical Record, May 7, 1873.

MECHANICAL POWER,

ITS APPLICATION IN OPERATIVE DENTISTRY.

By H. A. Smith, D.D.S.

(Missouri Dental Journal.)

Of late years we are so accustomed to hear the statement that the dental profession has made wonderful advancement in the direction of the preservation of the natural teeth, that we are inclined to accept the truth without taking thought of the causes that have brought it about. It is not my purpose at this time to attempt to enumerate all the agencies that have contributed to this end, but to call attention to the marked improvements in the instruments and appliances used in the operative department of dentistry, and particularly the late inventions in the application of mechanical power in operations upon the natural teeth, and to consider what will be the probable effect upon the profession, in an economic or business point of view, if these mechanical appliances are brought into general use.

These improvements are but the legitimate outgrowth of a more enlightened idea of our duty as dentists toward our patients and a trusting public, a consciousness that a higher standard of dental excellence must be raised to insure uniform success in this department of our specialty, and a determination to adopt means commensurate to the ends in view. Stimulated by such an exalted purpose, it were strange if the inventive genius of the profession did not bring forth handmaids, whose conformation to our desires would, in some degree, lead us to victory. Close observation has taught us that it was only perfect operations that accomplished this end.

Therapeutics applied to dentistry has been found within the last few years to occupy a very prominent position in the march toward substantial progress, and in many instances is the first step to be taken. Having exhausted, it would seem, the field of invention in instruments for hand labour alone, the attention of the inventive portion of the profession has been turned to discover methods by which the time usually employed for carefully made operations upon the teeth could be shortened, and the fatigue attending them, both to the dentist and patient, lessened. How well they have succeeded, those of you who have availed yourselves of these modern mechanical contrivances know. In the machines that we already have for special portions of the work, there is evidence of an inborn faculty for invention, quickened by education and training, in the dental profession that has no parallel in any other department of medicine. Prof. Brainard, the eminent surgeon, in his admirable address before the American Dental Association at Chicago, showed an appreciation of this, when he said, "The dentists, as a body, have, according to my own knowledge and observations, perfected the mechanical means of performing operations beyond what has been done in any other branch of the profession. They are better mechanics than the surgeons, and their instruments for accomplishing the different objects they have in view are more numerous, and better suited to their purpose, than are the instruments of surgeons." And since the attention of the profession is fully enlisted in this direction, with an increasing demand for new applications of mechanical power, who of us shall presume to assert what may not yet be accomplished? Certain it is, we can no longer say, with the old motto—

"By hammer and hand
All art doth stand";

and that our profession, which is both an art and a science, bids fair to become possessed, in part, at least, by the spirit of a mechanical age.

What will be the effect of the general introduction of labour-saving machines in operative dentistry upon the *material interests* of the profession? In reply, it may be urged that it is too soon to even suggest an inquiry of this kind; that not enough has yet been accomplished in the way of new methods, by these appliances, to affect, even remotely, the dentists of the present day.

But let us not deceive ourselves; the influence of the burring engine and the crystalline form of gold on dental fees is already being felt. Take, for illustration, an instance in which a fee of fifteen dollars was charged for restoring the contour of a tooth; the operation lasting less than two hours, the patient suggested to the dentist that the fee seemed out of proportion to the time employed. He replied, that with the employment of the burring machine, as he had seen, together with the use of a crystalline form of gold, he had effected quite a saving of time to both of them. Thus you see, in this instance, that the patient, educated as he is to estimate our services by the time consumed in the operation, will very soon seek to avail himself of any saving of time we may effect in this way to reduce the fees for dental services. And to a certain extent he would be entitled to it. There would be no fear of unjust demands from us in this direction, if we, as dentists, were quite sure of our coveted place in the ranks of the medical profession. But, since a large number of our profession practice their calling simply as skilled workmen, allowing themselves to be controlled in their charges by a low order of competition, we need not be surprised if a demand is made for a material reduction in our fees.

It was not my purpose, however, to be led into a discussion of the subject of dental fees, and yet I am quite sure, if the great majority of the profession had a better understanding of what, after the manner of a modern writer on art, might be called the *political economy of dentistry*, it would prove profitable, not only to themselves, but to their patients also.

Let me call attention to some of the causes which are recognized by the authorities on the subject as influencing compensation of labour: 1st. The agreeableness or disagreeableness of the employment. 2nd. The comparative difficulty and expense of acquiring it. 3rd. The constancy or inconstancy of employment. 4th. The responsibility involved. 5th. The probability of success. Without attempting to discuss these propositions at length, I may say that we, as dentists, are entitled to a reward superior to that which the skilled workman ordinarily receives: the ills resulting from confinement in a vitiated atmosphere, the great strain upon the nervous system caused by difficult and protracted operations, and, as a result of these, a shortening of our working years. Because, too, of the expense of time and means to rightly learn our profession. As a rule, there can be "no efficiency without apprenticeship." A recent writer estimates the cost of time and money required in the preparation for practice at five thousand dollars. During our pupilage our support must be drawn from other sources, and should be compensated for by increased earnings over those who are unskilled, or who have acquired their calling without so large an outlay of time. Also, because of the importance of the trust, when we assume the responsibilities of dental practice. The physician demands a reward adequate to the responsibility he feels attaches to the case treated; and the dentist who fails to recognize the responsibility which attaches to him as a medical specialist will inevitably put a low value upon his services. It is one of the peculiarities of our specialty, in contrast with others of the curative art, that time enters most largely into the value of our services. In filling teeth, the operation which mostly engages our attention in each individual case usually requires the greatest length of time in the merely mechanical treatment. This must be taken into the account when we estimate the value of the operation. It is only the too common custom of leaving out of the estimate the value of the acquired knowledge or skill which the dentist must possess in order that he may know when it is proper to perform this manual labour, as well as other considerations, that needs our earnest protest. The dentist who estimates his fee by the length of time which his dexterous hand is employed in the merely mechanical treatment of teeth, will necessarily look upon the labour-saving machine in his department in the same light, and affecting it in the same way, as in the manufacturing industries,— just so much as the time is shortened will he lessen the fee; and his patient has a right to demand this reduction of him. The dentist who establishes such a standard of value for his labour should live by it.

Observation has shown that there is almost a universal need in our population for the judicious advice and treatment of the dentist; and yet we are aware of the fact that it is only the few, comparatively, who ever apply to us for any other treatment than the extraction of their teeth. This state of things is due largely, no doubt, to ignorance, or a want of appreciation by a large proportion of our population of the importance of the preservation of the natural teeth. Not a few are kept from caring for their teeth properly by a dread of the pain usually attendant upon dental operations. But there are numbers in every community who fully recognize the importance of saving their teeth and who are fully aware of the benefits of judicious treatment at our hands, but are prevented from applying to us for the reason that they cannot afford to have their teeth cared for in a manner that will give any assurance of real benefit. Although I know of no occupation in which there is so great a range from the lowest to the highest fees paid as for dental operations, it is no exaggeration to state that for the simple operation of filling a carious tooth, needing no previous treatment, it varies from one dollar to one hundred, still the average fees for carefully made dental operations, at the present time, place them absolutely beyond the reach of this worthy class of our population. Any improvements, then, either in the methods of manipulation or in the materials used in the restoration and preservation of the natural teeth, which will tend to diminish the cost without impairing the quality of the operation, will prove a real benefit to mankind. And the class of labour-saving machines which we have been considering will, I doubt not, in time prove a valuable aid in contributing to so desirable a result. Invention, then, in this department should be stimulated by proper encouragement on our part, and if we, as practitioners of dentistry, are true to the interests of our patients, our own material interests will not suffer.

RUBBER-DAM LIGATURE.

By Henry S. Chase, M.D., D.D.S., St. Louis.

(Missouri Dental Journal.)

It is of the greatest importance that the thread should be small enough to be forced between any teeth, however close in proximity they may be, or however firm they may be in their position. Then, with this quality of *size* must be conjoined strength, and strength enough to resist breakage when forced between these firm and close set teeth; for teeth should not be *filed* apart to give room for the application of the rubber-dam. It is unwarrantable, excepting in cases of premature decay. I have found that "Marshall's," No. 25 unbleached linen thread the requisition responds to. Its strength is wonderful. It should be waxed when used. When the teeth are close and firm, press the thread *through* two or three times before applying the rubber, as it will loosen the teeth, and the dam will be applied with more ease. The thread is sometimes *cut* at proximate grinding surfaces of teeth that have been worn down by mastication, so that the surfaces of the two teeth are on a level. The sharp edges of these teeth should be removed by file and polishers before applying the dam, as otherwise the rubber will be likely to be cut, and breakage ensue. By forcing the thread between teeth that are apparently decayed, the thread is sometimes cut as it passes between the bodies of the teeth below their proximate grinding surfaces, or, if not cut into its surface, is roughened up. This cutting or roughening surely indicates a cavity of decay, more or less deep in the enamel of one or both of the teeth, between which the thread passes. This is a valuable means of diagnosis of decay on proximate surfaces; and careful attention should be given to the condition of the thread after it has been between the teeth. No other thread that I have tried has half the strength of Marshall's, and no other will answer my purpose.

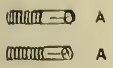
A NEW FORM OF SCREW FOR SECURING GOLD FILLINGS IN DIFFICULT CASES.

By Edmund Osmond, M.D., D.D.S., Cincinnati, Ohio.

(Missouri Dental Journal.)

I desire in this article to show the profession a new form of screw which I have invented for securing gold fillings in difficult cavities, together with my mode of applying the same.

A A are screws made of coin gold wire, annealed, split about half way once or twice, so as to form two or four arms when opened. B is a screw-driver surrounded by a tube for the purpose of holding the screw and carrying it to its place in the tooth. C is a drill for the purpose of drilling a hole, which is afterwards tapped by the screw tap D. E E, Figs. 1 and 2, are teeth with large saucer-shaped cavities, such as we frequently find.



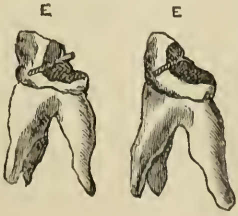


Fig. 1. Fig. 2.

I first make a hole in a sound part of the dentine with the drill C. I next tap it with the tap screw D. I then slip a split screw, A, into the screw-driver socket, B, and carry it to the tooth and screw it in tight, *nearly up to the end of the split portion.* I next pack my adhesive gold foil, or crystal gold (Leslie's is excellent for this purpose), *well around the screw, until a good foundation is laid.* I next split open the screw and mallet the arms down tight upon my gold foundation until solid ; I then weld on gold in the usual way with my mallet until the plug is finished.

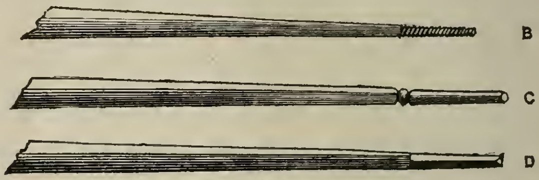


Fig. 1 shows a four-armed or double split screw with two of the arms bent down upon the gold and two standing. Fig. 2 represents a two-armed or single split screw with the arms malleted down.

I find that a single screw inserted in this manner will hold more than four standing screws, and besides, it is much easier to apply. Another great advantage is that I can frequently avoid exposing a nerve in a badly-shaped cavity, by inserting my screw above the pulp chamber, and rendering unnecessary dangerous retaining points. The arms of the screw can never move, as the superstructure of gold welded on the foundation part of the plug effectually secures everything in its place.

A FREQUENT CAUSE OF NEURALGIA.

(DENTAL COSMOS.)

DR. H. W. GRANT, in the Virginia CLINICAL RECORD, September, 1872, says :—Nineteen years of close observation and investigation have enabled me to conclude in my own mind as to the proximate cause of many neuralgic affections, demonstrating to my mind that a large number are sympathetic and symptomatic of dental derangements, but which nosologists have named in accordance with the region of the body in which the pain is experienced.

I have named these sympathetic neuralgic affections dento-neuralgia, predicated upon the proximate cause, the peculiar condition of super or sub-excitement—irritation, if you please, of the dental nerves—the fifth pair of nerves—within and upon the bony tissues of the teeth and their maxillary bones and investing periosteum in their anastomizing connexion with other sympathetic nerves; a morbid condition of the bony structure of the teeth, whether from original constitutional deficiency, or produced by vitiating gastric acids, or the premature decay of the teeth, dependent upon the absence of proper nutrition, or from scrofulous, scorbutic, or syphilitic diathesis, the action of mercury, arsenic, antimony, iron, quinine, iodides, &c., all of which exert their several peculiar influences upon the dental organs, and hence upon their nerves, causing dento-neuralgic symptoms in various parts of the body.

It is not my intention to detail the affections of the dental system in this paper; but I will mention one or two exciting causes. We find the dental tissues irritated and changed in character from the causes I have already enumerated. And any one of you gentlemen may observe, in many of the teeth which you occasionally may extract, the animal portion absorbed from the early constituents of the upper portions or orifices of the fangs, leaving them in a semi-transparent condition; the lower portions and necks to the crowns of the teeth running opaque, and presenting a normal appearance. While this change is being produced in the fangs, the alveoli and the dental periosteum become exquisitely sensitive—moderately to cold or warm applications, but intensely acute to the presence of acids, sweetmeats, and confectioneries. These are the primary effects of dental derangements and the premonitory symptoms of dento-neuralgic affections.

These teeth are often glassy, brittle, breaking readily under the extracting instruments. In many of the transparent fangs of such affected teeth, you will find the extreme points absent, from absorption; impressing the uninitiated with an unfounded idea or belief that he has broken off the apex of the fang in the act of extracting the tooth; the sharp speculated points prove the contrary.

In the class of teeth whose crowns are worn down and their pulp chambers filled in by a deposit of osseous matter, amber-like dentine, we too often find the maxillary absorbents exercising their baneful influence upon the roots of the altered teeth, with recession of the gums and their alveoli. Medical practitioners, and, alas! some dental practitioners too, designate these affections "scurvy in the gums."

The absence, too, of antagonizing teeth is another exciting cause of dento-neuralgic affections. The lower jaw, or more properly speaking "the inferior maxillary," finding no resistance, nothing upon which to rest, is by the contraction of the temporal muscles, closed to an unnatural extent towards the superior maxillary, which, acting like an overshut door lacking the resistance of the proper door-post, overstrains its hinges; so the inferior maxillary bone overstrains its joints, affecting the nerve to an extent to superinduce nervous irritability and hence sympathetic neuralgic paroxysms.

The dental system thus affected, presenting no external physical disintegration (or decay), exhibits some of the causes of dento-neuralgic affections in contradistinction to odontalgic pains portrayed by Prof. Bond. Dento-nervous irritation being established in the dental system, which, from "the infant muling and puking in the nurse's arms" to "the last scene of all," when death closes our earthly career, daily presents to our observation neuralgic, symptomatic, and sympathetic paroxysms.

Thus are daily presented to the medical world, the physician, the surgeon, and the dentist, innumerable instances in which each and all may recognize the essential starting-point of a correct diagnosis of many rheums, pains, and convulsions, which, without any apparent exciting cause, experience shows to affect patients from childhood to old age, dependent upon and arising from a source often entirely overlooked and even little dreamed of in medical and dental philosophy.

It is useless to cite the countless number of cases where patients have been subjected, for years, to the most harassing and, I might almost say, empirical treatment, in which have been used narcotics, sedatives, emollients, irritants, stimulants, counter-irritants, moxas, nervines, anti-spasmodics, sudorifics, phosphates, chalybeates, alkalies, acids, arsenic, mercury, copper, bismuth, iodine, potassa, quinine.

Then again have been brought to bear phlebotomy, cupping and leeching, alteratives and aperients, cold and hot baths, sulphur-baths and fumigations, electricity, sea-bathing, the surgeon's knife for the excision of some innocent, unoffending ganglionic centre.

Then again have been called into requisition homœopathy, hydropathy, spiritualism, polarization, clairvoyance, Thompsonianism, and nostrums, which have all stepped in and taken their turn; "certain to effect a cure." If the now wretched, patient sufferer has had sufficient stamina, or vital force, to resist these terrible onslaughts and assaults upon the citadel so frail, so wonderfully and fearfully made, it has been to sink into helplessness and despair.

RECENT VIEWS ON ANÆSTHETICS:

THEIR MORTALITY, AND MODE OF ADMINISTRATION.

By JOHN MURRAY, M.D.

(LONDON MEDICAL RECORD.)

(Continued from p. 26.)

II.—*Lister, Clover, Squarey, and others on the Mode of Administering Chloroform.*

An attempt is made to reconcile the discrepancies in the opinions of authorities by the want of experience, by the mode of administration of the anæsthetic, by the kind of inhaler, by the neglect of the pulse as an indication of danger, or, on the other hand, of the respiration, and so on.

Mr. Lister, in Holmes's 'System of Surgery,' believes that the notion that extensive experience is required for the administration of chloroform is quite erroneous, and does great harm by weakening the confidence of the profession in this invaluable agent, and limiting the diffusion of its benefits. Dr. Poore (*Lancet*, Oct. 12, 1872,) considers that the anæsthetics are by far the most potent class of drugs with which the medical practitioner has to deal. Their employment is fraught with imminent danger in the hands of the ignorant, and may bring death to the patient and disgrace to the doctor. This gentleman believes in "the necessity of giving students proper and systematic instruction in the management of this highly dangerous class of medicines. No man, he says, can be a good anæsthetist without practice. Every qualified medical man should be able to bring to the task that confidence and fearlessness which habit alone can give." Mr. Lister (Holmes's 'System of Surgery') gives some simple instructions which, he says, "may be acted on without difficulty by any intelligent medical man." He says, "Preliminary examination of the heart is never thought of, and during the inhalation the pulse is entirely disregarded; but vigilant attention is kept upon the respiration, and in case of its obstruction firm traction upon the tongue is promptly resorted to." Dr. Squarey ('Administration of Chloroform and Nitrous-Oxide') thinks that Mr. Lister is so far right, and believes that deaths from chloroform in the manner described by Mr. Lister do occur, and says that in his experience the pulse does not give much sign of danger till after those given by the respiratory system; yet he believes that cases of death occur in which the pulse ceases before respiration, and quotes cases of threatened death in point. He therefore advises that the pulse should always be carefully watched, as in cases of this kind the only chance of saving the patient depends on this cessation of the pulse being at once recognized, and means immediately taken to restore the circulation. Mr. Warrington Haward, who has given chloroform to more than 1,300 persons, disagrees with Mr. Lister in his advice to disregard the pulse, and says that he has not unfrequently had indications of danger from the pulse, which could not have been obtained from the respiration.—(MEDICO-CHIRUR. TRANS., vol. liv.)

Mr. Clover, the most experienced living anæsthetist, thinks (BRIT. MED. JOURN., July 29, 1871,) that it is necessary to observe the pulse. Dr. Poore (*Lancet*, Oct. 26, 1872,) thinks that the respiration is of more importance than the pulse, but that the pulse is by no means to be neglected.

Dr. Sansom (BRIT. MED. JOURN., April 12, 1873,) believes that the chief mode by which the anæsthetic accomplishes its fatal effect is by paralyzing the heart. Dr. Thomas Green, of Bristol (BRIT. MED. JOURN., May 25, 1872), expresses the strongest dissent from the doctrines of Mr. Lister. Referring to disregarding the pulse, he says, "Mr. Lister's teaching is more than a serious mistake; in practice it will be found a fatal error."

Regarding the various means of producing chloroform anæsthesia, the same amount of dispute occurs.

Mr. Lister (BRIT. MED. JOURN., July 29, 1871,) recommends a folded towel as the simplest and safest means of administering chloroform; and he holds that when this is used the respiration becomes obstructed before the circulation fails, and that circumstances occasionally arise in which the patient's life will be placed in imminent jeopardy unless the obstruction be cleared away by firm traction upon the tongue; and, further, that as this interference with the breathing may occur in a very insidious manner, it is wisest for the administrator to keep his attention riveted upon the respiration, rather than have it distracted by simultaneous observation of the pulse.

Dr. Sansom (BRIT. MED. JOURN., April 2, 1873,) believes that Mr. Lister, in coming to the conclusion that the towel is the best means of administering chloroform, has been victimized by imperfect experimentation, and that the method is most dangerous.

Mr. Clover, again, regards the folded towel as a dangerous means of administration in comparison with an inhaling apparatus devised by him some years ago. He describes (LANCET, Nov. 9, 1872,) his mode of administering the anæsthetic. He never gives more than 3¼ minims of chloroform in 100 cubic inches of air, and watches the pulse with even greater vigilance than the breathing, a plan which he has advocated and practised for many years. He says (BRIT. MED. JOURN., July 8, 1871), "I have administered chloroform more than seven thousand times" and other anæsthetics in four thousand other cases. "For several years I gave chloroform upon lint held at a distance from the face, but covered over with a towel, but I found it impossible always to prevent the patient from inhaling more than I desired." Dr. Poore (LANCET, Oct. 26, 1872,) says that "with Clover's apparatus you can be absolutely sure that you are not giving your patient a dangerously concentrated atmosphere of chloroform; but I must warn you that in the hands of a careless person it is quite capable of killing, and that, when using it, you must watch your patient as constantly and as carefully as if no inhaler were being used." Dr. Squarey ("Administration of Chloroform and Nitrous-Oxide") says, that Clover's instrument is the only inhaler which practically fulfils the one requirement, namely, the power of regulating the percentage of chloroform and air inhaled, necessary for safe use. Mr. Lister, on the other hand (BRIT. MED. JOURN., Jan. 29, 1871), says, "I have been accustomed to regard Mr. Clover's apparatus as in his hands a harmless luxury," and states his opinion that Mr. Clover's bag and mouth-piece are a cumbrous means of effecting chloroform anæsthesia. Dr. Skinner, of Liverpool (BRIT. MED. JOURN., Jan. 29, 1873), enters "a decided protest" against the "disgusting" practice of using inhalers, his own excepted, in which the same mouth-piece and apparatus are applied indiscriminately to all. His own apparatus is, he says, simple; and as it is supplied with two or more flannel covers, there is no excuse for using it to two persons in succession without a perfectly clean inhaler each time. Dr. Squarey believes that, next to Clover's apparatus, a piece of lint is the best medium for administering chloroform. Dr. Poore (LANCET, Oct. 26, 1872) says, "If you have not got Clover's instrument, use a napkin, or a piece of lint." Mr. Lister believes that he has shown that the amount of chloroform given off from a folded towel on which a drachm and a half had been poured, held close above the face, was not more than enough to form an atmosphere containing 4½ per cent. of chloroform.

Dr. Sansom says that his experiments "tend to show that the percentage of chloroform-vapour capable of being inspired when the anæsthetic has been poured upon a piece of lint, has been greatly under-estimated. When 76·5, 38·25, 25·5, 12·75, and 6·375 grains respectively of pure chloroform were poured upon a piece of lint, and 100 cubic inches of air, at a temperature of from 60 to 64 deg. Fahr., were passed over it in each instance, the resultant atmosphere contained 9·9, 8·5, 6·9, and 4·3 per cent. of chloroform-vapour (TRANS. OF THE OBSTET. SOC. OF LONDON, vol. x. p. 136). When little more than a drachm, therefore, of chloroform is poured upon lint at ordinary temperature, a patient may inhale an atmosphere containing more than 9 per cent.—a dose certainly not free from danger."

REPORTS OF MEETINGS.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

Monthly Meeting, Monday, June 9th, 1873.

ISAAC SHEFFIELD, Esq., President, in the chair.

MR. SEWILL showed an adaptation of the reading-desk invented by Mr. Carter, of New Cavendish Street, to the purposes of a dental instrument table.

MR. C. S. TOMES said he had had a similar table in use for two or three years, and had found it very convenient.

MR. OAKLEY COLES presented to the Museum, for Mr. Brunton, of Leeds, a specimen of a new contour flask.

MR. C. S. TOMES presented a specimen of a diseased canine tooth, in which the fang had been attacked and deeply eaten into by absorption around the pulp canal, while there had been a separate centre of attack half way up the fang. The disease must have originated externally, because at the time it attacked it the pulp was fully alive, and had protected itself by forming secondary dentine, so that the pulp canal opposite the upper point of invasion was entirely obliterated by secondary dentine.

MR. SEWILL presented a specimen of a pivoted tooth which he had recently extracted, but which was pivoted in 1851 by Mr. Woodhouse. He wished to know what method that gentleman had adopted of attaching the pin to the root in order to secure such a durable result. He also recommended the use of absolute alcohol for drying cavities before filling.

MR. C. S. TOMES bore testimony to the efficacy of absolute alcohol in drying a cavity. The cavity should first of all be dried as thoroughly as possible, then wetted with absolute alcohol, and a current of hot air passed through it. He recommended that cavities should be sponged out with chloroform before being filled with gutta-percha, as if any moisture then remained it would be a solvent for gutta-percha, and make it stick excellently.

Mr. Woodhouse said the cement he used in the tooth shown by Mr. Sewill was gum copal dissolved in sulphuric ether. It was perfectly insoluble in water. The gum copal should be broken up into nodules, about the size of small shot, and put into sulphuric ether and shaken. He still occasionally used the cement in fastening very short-pinned mineral teeth to plates where the silver would not hold. This fastening required very careful handling, because the cotton wool with the cement was apt to split the tooth.

Mr. Rogers said he had been constantly in the habit of using sal volatile to a tooth before stopping, especially if there had been any decay left behind, from a notion that it might neutralize any free acid that might exist.

Mr. Coleman said he had frequently adopted the same practice, and found that fillings so treated lasted longer than they otherwise would have done.

A paper was then read by **Mr. A. J. Woodhouse**, "On the Treatment of Exposed Pulp," of which the following is an abstract.—The author said, "The unossified portion of the membrane from which the dentine is formed is called 'the pulp,' and may be described as composed of arteries, veins, nerves, and possibly cellular tissue, and is highly sensitive. It has its uses, or it would not exist: at these we will glance, that we may better appreciate its value to those who consult us. The pulp is the chief means of connecting the tooth vitally with the general economy of the body; for, although the peridental membrane attaches the tooth to the alveolar process, it, to a very modified extent, conveys life into the dentine; whereas the pulp, entering into the body of the tooth, conveys sensation and new matter into and throughout the dentine.

"It may be difficult to prove this latter assertion by dissection, but not so by reasoning; for if the dentinal tubes are not sealed up with new matter, how is it that a recently-stopped tooth gradually loses the excessive sensitiveness to heat and cold? The pulp, by giving sensitiveness to the tooth, probably enables us to feel more readily than we otherwise should any substance between our teeth which would be injurious to them. We are also thus made aware of the advance of decay, which would often otherwise proceed without our knowledge until the teeth were entirely lost. And, lastly, while the pulp exists in health, the peridental membrane remains healthy, and is not irritated by the propinquity of dead bone.

"The pulp in a perfectly sound tooth is entirely concealed from view by the investing dentine, enamel, or cementum. The removal of these by accident, attrition, decay, or accidentally during an operation, will expose it. It is with the two last that I propose chiefly to deal; but I will just glance at the two first-mentioned conditions.

"First, then, of exposure from accident, such as splitting the tooth either through the centre, or severing only a portion of the crown either from mastication or a blow: this, in the case of premolars or molars generally necessitates their immediate removal, but in incisors and canines extirpation of the pulp is more practicable.

"I syringe the cavity occasionally until all bleeding ceases, and then pass up to the end of the cavity a few fibres of cotton wool saturated with carbolic acid, and sometimes a little tannin in addition; this I remove after a few minutes, and replace with another little wad similarly charged, which may be left permanently there if bleeding has entirely ceased. If it is desirable to spare the patient pain, nitrous-oxide can be administered.

"I will now speak of exposure, or approach to exposure, from attrition. The patient generally seeks help before the pulp is quite open, and in this case, although the dentine may look pink and be very tender to the touch, if there has not been positive aching, I would seek to preserve it, if, as is generally the case, the surrounding walls of dentine form a basin-shaped cavity. I undercut these walls, and, placing a piece of parchment-paper, damped with carbolic acid and dusted over with tannin, over the most tender portion of the cavity, fill with osteo, cement, or gold, as is most suitable for the case, and the result is generally most satisfactory. Should, however, the pulp be actually exposed, the irritation already existing would, in my judgment, prevent any chance of saving it by any treatment, and I should proceed to extirpate it with arsenious acid, except in the case of single-fanged teeth, when I should proceed as already described in the cases of fracture from violence. In cases of exposure from decay excessive care must be taken rightly to diagnose the conditions before deciding on the treatment. We must be tolerably certain of the condition of the pulp, or the result will be mere haphazard. Should the patient complain that he has been suffering from continued pain, either in the teeth or from facial neuralgia, it is almost a certainty that the pulp is already exposed, and more or less inflamed and suppurating, and consequently, in my experience, not in a condition to be restored to health. But the decay in the tooth has often not proceeded so far as this, and the patient tells you that the tooth is sensitive to heat and cold and sweet things; also to food pressing into the cavity, and that the pain subsides in five or ten minutes on each occasion—there having been no continued toothache. In such a case I should have good hope of saving the pulp; but as it is probably only protected by softened dentine, I should in this, as in the foregoing condition, proceed with great caution to prepare the cavity.

"In preparing the tooth, I find the tenderness of non-sensitiveness of the dentine to be a great guide to the condition of the pulp before it is actually reached. If the bone is excessively tender, especially if it is so towards the cusps and in parts most remote from the nerve, it is a good indication that the pulp is healthy; for it is a proof that it still retains its power to transmit life through the tubuli, which it ceases to do as soon as the suppuration has commenced. If, therefore, on the other hand, the patient feels little or no pain until the pulp is reached, it is almost certainly beyond recovery.

"I may here remark that I entirely disapprove of the use of gutta-percha as a temporary filling in living teeth in which the nerve is nearly exposed; I prefer in such cases infinitely an osteo stopping: for these reasons—it is equally a non-conductor, and it adheres so perfectly to the walls of the cavity, as entirely to exclude all moisture; whereas Hill's and Jacob's, though in themselves impervious to moisture, do not so fill the cavity as to exclude the fluids of the mouth, and consequently such teeth filled with them soon begin to irritate, and the pulp has eventually to be sacrificed. But in dead teeth I find such stoppings very useful and lasting. Having then exposed the pulp, and on examination it shows no appearance of having wasted, but the pulp-chamber is full, I at once place lightly in contact with it a small pellet of cotton wool, rolled rather loosely, and saturated with carbolic acid; in about five minutes I repeat this, pressing it rather more firmly into the exposed portion of the nerve, and then, after a short interval, examine it. Should it still show signs of bleeding, I repeat the treatment until that ceases; and if the pulp then appears shrunk into the cavity, I at once decide to destroy it, as I consider this a sure sign that its vitality is lowered, and that it would therefore perish under conservative treatment. But should it still fill the cavity, and become white under the action of carbolic acid, I should have some hope of saving it, even in cases where there has been a little previous aching. If the patient will have the opportunity of returning to me in case of pain coming on, I should proceed to stop it; but if he is going beyond reach of me, it is wiser at once to destroy it, as the chances of success, although all looks promising, are very small when a tooth has once ached.

"In some cases in which the whole of the decay is apparently removed from a cavity, but on closer examination there is one place in which a little white spot, about the one-sixteenth of an inch in diameter, appears in the direction of the pulp cavity—to this I immediately apply the spoon-shaped instrument, and generally find the dentine quite soft, and the pulp exposed beneath.

"The following is my mode of destroying the pulp. I make a very small wad of cotton wool at the end of a probe, about one-eighth of an inch long and one-sixteenth of an inch wide; this I saturate with carbolic acid, and then dip the tip into finely powdered arsenious acid, taking up about half the bulk of a pin's head; this I place upon the exposed position of the nerve, pressing it lightly into its place, and then protect it with another wad of cotton wool saturated with a solution of gum benzoin and tannin dissolved in spirits of wine. The dose I generally find sufficient to kill the pulp, but a second and third are sometimes necessary. It is possible to be misled on examining the pulp after it has been dosed, for it is often sensitive to a light touch, but from one piercing its substance little pain is felt, and after it has been thus broken the cavity may be entered without causing pain. This, I think, is due to the unbroken pulp being a sac containing fluid, which, on slight pressure, is made to impinge on the living fibres at the end of the fang, but on rupturing the external coats of the pulp the fluid escapes, and the substance of the pulp may be removed with little or no pain. I much prefer removing it from the tooth on the second or third day from applying the arsenious acid, as it then generally comes away entire, whereas the delay of a week or two renders it friable; otherwise I do not find any injurious consequences from leaving the arsenious acid in the tooth for about two weeks, but beyond that time irritation is very apt to come on in the periosteum.

"I have already described the mode of removing a living nerve from the pulp-chamber, and the way I treat it afterwards; I follow the same method when it has been dosed with arsenious acid, but in molars it is often impossible to remove the dead bulk from all the roots, some of the cavities being too small to admit an instrument. In such cases I remove it from as many of the roots as I can, fill these cavities, and then place a small piece of cotton wool dipped in carbolic acid and tannin in the pulp-chamber over those from which I have cut, remove the deadened pulp, filling over it with osteo or metal at once, or in such cases occasionally with Hill's stopping.

"If, as sometimes happens, the pulp has been for some time dead in one of the roots of a molar, and I have to destroy it in the others, and it is impossible to get at the cavity in the root that has been long dead, I fill the tooth with a cement, and leave a small hole through the stopping by placing a small piece of wire in the pulp-chamber, packing round it, and when finished, withdrawing the pin; or I insure vent for the secretion by drilling a small hole into the pulp-chamber, just above the margin of the gum. I have also for years treated teeth that have been long dead in this way with the most satisfactory results. I have used various materials for filling roots—gold, tin, cotton wool, and osteo; but I generally now adopt the latter.

"I have already described the removal of the pulp and the treatment immediately following it. Having placed a few fibres of cotton wool, damped with carbolic acid, and perhaps some tannin, at the very end of the pulp-chamber, I carefully dry the cavity, and, having previously mixed a little osteo, I surround a very fine softened broach with a few fibres of cotton, charge it freely with the osteo from the spatula, then carefully pump it up into the cavity by working it out and in, and, on withdrawing the broach, leave the cotton and osteo in the cavity, adding a little more cotton to insure the cavity being perfectly filled.

"I have found in roots of upper molars, where it was, from their minuteness, impossible to get the finest broach to carry cotton, that by thrusting the naked broach as deeply as possible into the fang and rotating it, and then placing a little of the creamy osteo at the opening of the cavity and working the broach in and out, a very good result was obtained; for capillary attraction, aided by the pumping, carries the osteo nearly or quite throughout the cavity, sealing it up and drying any portion of the dead pulp that may remain within it.

"Sometimes patients will apply to us with considerable pain in any of the six upper front teeth; and on examining them it is found that the pulp has wasted from the cavity in the crown, but the symptoms indicate inflammation of that tissue, and the tooth on percussion is not tender, showing that the peridental membrane is not affected. In such cases, with my Morrison saw, I cut away the inner wall of the tooth until I have an opening in a line with the pulp-cavity, and then, having prepared my patient for it, pass up a fine broach, as in the case of a fractured tooth, to the end of the cavity. In a case of this kind I leave the carbolic acid dressing in the tooth for two or three days, renewing it each day to insure a healthy condition of the vessels at the apex of the fang. I have often adopted this treatment also in the case of bicuspids in both jaws with good result, and prefer in such cases the above treatment to using arsenious acid; for so little of the pulp often remains that it would be very difficult, and as painful, perhaps more so, to get the arsenious acid in contact with it; and besides this, it is not desirable to place arsenious acid deeply in the root of the tooth.

"We now come to the last condition of exposure which I mentioned, that of the accidental uncovering of a healthy pulp during operation in a tooth which has not previously ached.

"First, it is necessary to find out whether it is really opened; this it is often difficult to ascertain, for it is most undesirable to do so with the probe, for with it the membrane would be wounded, and be less likely to be successfully preserved in health. The eye is, of course, the best means of deciding if the spot can be viewed with or without the aid of the mouth-glass; but should this be impossible, it is a good plan to tell the patient to suck it; if this produces pain, the probability is that the pulp-chamber is open. A small piece of cotton applied to the part will often confirm the question by coming away tinted with blood. Another test is to syringe on the supposed point of exposure with water at 95 degrees of Fahrenheit: if this produces pain, exposure is pretty certain, as it will not give pain if the chamber has not been entered. If the nerve is open, I apply cotton saturated with carbolic acid, as already described, until all pain and bleeding cease, and then at once place on it a small disc of parchment-paper daubed with carbolic acid, and dusted over with tannin, preserving it with a wad of cotton firmly on the nerve, so as to exclude all air, the presence of which is, I believe, very irritating to the wounded pulp, and detrimental to its healthy healing. If the cavity in the tooth be an interstitial one, care must be taken that the shield does not approach too near to its edge, especially of the part nearest the gum, as if it reached the edge the moisture of the mouth would be apt to insinuate itself beneath it, and so irritate the pulp. The shield then being in its place, I stop the tooth, either with osteo or Sullivan, in either case carefully pressing the stopping, so as to come closely in contact with the parchment-paper without driving it into the pulp. Should it be doubtful, after the most careful examination, whether the pulp be exposed or no, the safest plan is to treat the case as one of exposure, in the manner just described. I generally use Sullivan for filling molars in these cases, as it is more lasting, and its blackness is not at the back of the mouth an objection; but for bicuspids and incisors I fill with osteo. In the former I sometimes place a little of Fletcher's amalgam near the gum, and so prolong the duration of the osteo filling, as it is there that it first fails, and there is always a great danger of patients not returning as soon as they ought for the inspection of the filling. On removing the stopping and examining the exposed pulp after a year or two, I rarely find it ossified, but it is rather sunken and somewhat damp, but the dentine very sensitive in all parts of the cavity, thus proving that the vitality is not impaired. In such cases I re-stop them as I filled them in the first place, but I also after a time often remove a portion of the osteo, and fill over it with gold. I have a great many patients who have had teeth so treated in their mouths for years, and have never had the slightest pain from them; but I also have a small per cent. of failures."

Mr. Rogers said, when he occupied the presidential chair he made a special request that some member of the Society would bring forward some plan for the treatment of the pulp with a view to its preservation. Mr. Woodhouse very kindly responded by reading his paper "On Carbolic Acid," and that was the first occasion on which carbolic acid was publicly introduced to the profession. Many years ago, he himself read a paper "On Capping the Exposed Pulp," and the only general law he could possibly educe was that of avoiding all previous irritation. He found that the cases which succeeded were those in which the pulp was suddenly exposed during the operation, while those cases which he had previously treated with arsenic or chloride of zinc, or in some other way, had a great tendency to fail. Mr. Woodhouse had referred to another general law in removing the pulp, that the fangs should be filled as soon as possible after the removal of the pulp in order to exclude the air. He was not so particular as Mr. Woodhouse about the cessation of the bleeding. In his opinion, there was no objection to filling even while there was still a little bleeding. Those were the only two general laws he had been able to arrive at, but it was most desirable, if possible, to have some rule by which it might be at once known whether the pulp could be preserved alive or should be destroyed.

Mr. Sewill said, there appeared to be a great divergence of opinion as to the pathology of diseases of the pulp. Mr.

Coleman had distinctly stated at several meetings that suppuration very rarely takes place from exposed pulp, and that the discharge is not pus, but a serous fluid; while, on the other hand, Mr. Salter was of opinion that suppuration was more easily excited in the pulp than in many other tissues. He himself had paid particular attention to this point during the last few months, and in a large number of cases of exposed pulp he had certainly found pus. He had examined it under the microscope, and seen that it really was pus. He thought it was an entire mistake to remove the whole of the carious dentine in a large number of cases. Dentine in conditions of partial disorganization could be brought into a healthy state, or could be hardened, so as to be left with perfect safety at the bottom of a cavity. The absolute alcohol was very useful where there was a mass of leather-like dentine at the bottom of a large cavity. It could be hardened and washed dry, and entirely freed from any carious action.

Mr. Coleman said, the fluid which proceeded from exposed pulps he had almost invariably found to differ very considerably from pus as it was ordinarily recognized. In works on morbid anatomy pus was generally described as a bland unirritating fluid, possessing alkaline properties, whereas the flow from the exposed pulp was a thin watery fluid, of a most offensive character, and much more resembled that which escaped from a gangrenous portion of the body. If they simply had to deal with pus there would be very little difficulty in causing its cessation. On several occasions, when removing softened dentine, he had noticed a clear issue of pus which had been penned up in the pulp cavity, but a few applications of a solution of tannin in alcohol or ether had been sufficient to arrest that. He did not consider that a fluid should always be called pus merely because it might contain a few pus corpuscles.

Mr. C. S. Tomes said, one of the greatest authorities on Dental pathology of the present day—Prof. Wedl—mentioned the occurrence of pus on the surface of exposed pulps, and he was such an accurate observer that it was hardly possible that he could have been mistaken in the matter. In the treatment of the pulp it was most important to exclude the air. Suppuration very seldom occurred where air had not been admitted. This seemed in a measure to account for the more successful treatment of exposed pulps when the exposure was accidental. He believed that this one point of exposure or non-exposure to the air caused the whole difference between success and non-success in ninety-nine cases out of a hundred.

Mr. Moon said he had used blotting-paper dipped in carbolic acid for covering over the pulp. With mesial or distal decay the great difficulty of reaching the further canal in the molar tooth might probably be overcome with the aid of Morrison's burring engine, by cutting up the centre with the drill, instead of chiselling down off the surface.

Mr. Coleman, referring to the plan adopted by Mr. Woodhouse of filling a tooth with gold, and leaving an aperture by filling round a piece of gold wire, which was subsequently removed, said he had used thin, smooth, binding wire, slightly moistened with oil, for the same purpose.

Mr. Henry said, he did not find that hæmorrhage from the pulp was any hindrance to its preservation. He simply staunched it thoroughly with carbolic acid, and put blotting-paper over it, and had found this treatment successful in all but three cases out of the last 500. He preferred blotting-paper to parchment, as it was more flexible. Whenever he had met with a failure he had been able to attribute it either to exostosis or to the formation of independent nodules in the pulp. His observation did not, of course, apply to suppurating pulps.

Mr. Harding asked Mr. Woodhouse if he had met with many failures in destroying pulp. So far as his experience went, there were no failures when the pulp was destroyed, though there were failures in the conservative treatment.

Mr. Mummery said, he had seen a case in which a tooth treated in the old fashion with an amalgam of silver and mercury had lasted sixty-six years, though it had become perfectly black. Generally, however, that treatment produced a persistent gumboil, and eventually necessitated the loss of the tooth. Teeth were very frequently not cut down sufficiently to ascertain their real condition, and failure was, therefore, the result. Many years ago he had tried, with complete success, the effect of cauterizing by means of a platinum wire raised to a white heat by a self-acting blowpipe, but the patients were so terrified by the roaring of the blowpipe that he had ceased to adopt that method.

Mr. Coleman was astonished to hear Mr. Harding say that treatment by the destruction of the pulp was always a success. His experience was that teeth so treated, though they lasted for a time, were almost invariably lost.

Mr. Hutchinson suggested the use of a hydrogen jet evolved from sulphuric acid and zinc through a very fine glass or platinum tube, so that a flame the size of a pin's head could be applied directly to the exposed nerve.

Mr. Oakley Coles said he had used pepsine with very great success, not only in cases of exposed and suppurating pulp, but also in polypus of the pulp.

Mr. Dennant thought the health and temperament of the patient should be well considered, as well as the actual condition of the teeth.

Mr. Woodhouse, in reply, said, in his previous paper 'On Carbolic Acid,' he was greatly assisted by Mr. Gibbon, of Brighton, and Professor Church, of Cirencester. He never attempted to stop a root while it was bleeding profusely, but a little oozing of blood was of no consequence. He regarded the admission by Mr. Sewill that softened dentine might be left in a cavity as a very dangerous one to make before young practitioners, though there were undoubtedly some cases in which it might be left. He was glad to hear that Mr. Coleman adopted a plan, similar to his own, of leaving a little duct through the stopping, where the discharge could not be effectually prevented, such as in the external fangs of upper molars. If such a plan was not resorted to, an abscess would be sure to form. He preferred parchment-paper to blotting-paper as a covering, as it was not so easily compressed into the pulp-chamber. He had never kept a regular register, but was of opinion that at least 95 per cent. of the cases which he had treated had proved successful. Of course the condition of the patient was of great importance. In persons of a scrofulous nature there was not the same tendency to heal as in those in perfect health. He had tried actual cautery many years ago, but the results had been so unsatisfactory that he had ceased to employ it.

The following donations to the library were then announced: —Mayhew "On the Horse's Mouth, showing the Age by the Teeth;" five numbers of the "Monthly Review of Dental Surgery;" "Mémoire sur les Kystes des Machoires," presented by Mr. Todd.

Mr. J. H. Phillips, of Cavendish Square, was nominated as a Member.

The President, after thanking Mr. Woodhouse for his paper, and the various donors to the Museum and Library, congratulated the members on the spirit of progress, and the skill which had been manifested in the papers which had been read during the past session, and the proceedings then terminated.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Examination for Diploma in Dental Surgery, June 26, 1873.

2 to 4 o'clock P.M.

N.B.—The Candidate is required to answer at least one of the two questions both on Anatomy and Physiology, and on Pathology and Surgery.

Anatomy and Physiology.

1. Describe the soft palate and uvula, their uses, and the muscles by which they are moved.
2. Mention the nerves which supply the tongue, describe their distribution, and state their respective functions.

Pathology and Surgery.

1. Suppose a portion of either maxillary bone to have been broken during the extraction of a tooth; state how you would treat the injury, and explain the process by which it may be repaired.
2. Describe the symptoms, consequences, and treatment of acute inflammation of the antrum.

5 to 8 o'clock P.M.

N.B.—The Candidate is required to answer at least two out of the three questions both on Dental Anatomy and Physiology, and on Dental Surgery and Pathology.

Dental Anatomy and Physiology.

1. Describe the Dental sacculus of the deciduous teeth.
2. At what age are there the greatest number of teeth in the jaws, and what is their number? Describe their relative position to each other.
3. Describe the structure of the cementum.

Dental Surgery and Pathology.

1. Describe the different varieties of tumours termed "Odontome," explaining fully their pathology and method of development. Why is it so important to diagnose an odontome from other tumours connected with the maxillæ? and how is the diagnosis effected?
2. In decay of teeth, what structure is the first to undergo alteration, and by what agency are the constituents of the hard structure of dentine altered in character and consistence? State also what constitutional conditions predispose teeth to decay.
3. Describe the various tumours met with in connexion with the gums, explaining their pathology and the appropriate treatment.

The following gentlemen obtained the Diploma of Dental Surgery:—

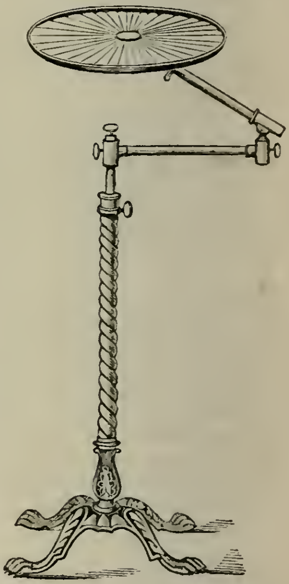
Jown Howard Mummery, M.R.C.S., Cavendish Place.
Cursetjee Framjee Khory, Bombay.
James Rankin Brownlie, Glasgow.
Peter Bruce, Valparaiso.
Edmund Binns, Croydon.
Edward Thomas Kissack, Douglas, Isle of Man.
Arthur Robert Phillips, Cavendish Square.
H. A. B. Rodway, Torquay.

William Merson, South Molton, Devon.
James Merson, South Molton, Devon.
Edwin J. Richardson, Duke Street, Manchester Square.
Ashley Gibbings, Chichester.
David Hepburn, Portland Place.

J. M. Finzi, Esq., passed the primary professional examination for the Fellowship of the College, held on the 26th and 27th of May.

NEW INVENTIONS.

CARTER'S DENTAL TABLE.



This instrument-stand is a modification of Mr. Carter's invalid's reading-desk, a contrivance for holding a book in any position before a recumbent or sitting patient. For the dentist's use, instead of a desk, it carries a small table, which may be made of any pattern, to suit the requirements of different practitioners. By means of a concealed rackwork in the topmost arm, it can be instantly adjusted to any desired height. The table is attached to a ball-and-socket joint, which, with other rotatory joints at different positions, affords lateral movement in every direction. After placing a patient in the desired position for a filling operation, this table can be at once moved up close to the face, thus preventing fatigue of the dentist, especially in long gold-plugging operations. Several trays can be provided, one to contain excavating instruments, another foil and pluggers. The stand is free from vibration. It can be made to carry other contrivances besides that figured in the engraving. For example: at the position of the first joint a second large table can be fixed, whilst a spittoon may be carried by an arm a little higher. It is made by Mr. Carter, of 6a, New Cavendish Street.

CORRESPONDENCE.

DENTAL HOSPITAL BUILDING FUND.

To the Editor of the MONTHLY REVIEW OF DENTAL SURGERY.

DEAR SIR,—May I avail myself of your journal to state to the Profession that I shall be happy to receive either donations or promises of donations to the Dental Hospital Building Fund. The Building Committee intend to issue shortly a first list of contributions to the fund. It would be well, therefore, for those who desire to appear in that list to communicate with me without delay. I am happy to be able to state that we shall take possession of the house in Leicester Square, on the 24th instant.—Your obedient servant,

41, Brook Street, Grosvenor Square,
June 20, 1873.

EDWIN SERCOMBE,
Treasurer of the Building Fund.

THE NEW DENTAL HOSPITAL OF LONDON, LEICESTER SQUARE.

THE following circular has been issued to the Profession by the Building Committee of the Hospital:—

Appeal to the Members of our Profession in support of the Dental Hospital of London by the Building Committee.

The Members of the Dental Profession having a strong and direct interest in the further development of the Dental Hospital for educational purposes, it has been thought right to ask their assistance, before appealing to the public, for support on the ground of the usefulness of the Hospital as a public charity; and it cannot be doubted that the example of earnest assistance at the hands of the Profession will be followed by the liberal support of the public.

A List of Subscriptions already received to the Building Fund of the Hospital is now about to be published. To render this as complete as possible, the Committee will feel greatly obliged by an early return of the accompanying form, duly filled up and signed, accompanied by a cheque for the amount, addressed to the Treasurer, Edwin Sercombe, Esq., 41, Brook Street, Grosvenor Square, W.

DENTAL HOSPITAL OF LONDON.

Contribution to the Building Fund.

Name

Address

IN ONE PAYMENT.	IN FIVE ANNUAL PAYMENTS.

APPOINTMENT.—Harry Rose, Esq., L.D.S., R.C.S.E., to be Dental Surgeon to the Metropolitan Free Hospital, Devonshire Place, *vice* — Gregson, Esq., resigned.

DENTAL HOSPITAL REPORT.

DENTAL HOSPITAL OF LONDON.

Monthly Report of Cases Treated from June 1st to June 30th, 1873.

Extractions:—Children under 14, 346; Adults, 513	859
Under Nitrous-Oxide	127
Gold Stoppings	71
White Foil ditto	65
Plastic ditto	131
Irregularities of the Teeth treated surgically and mechanically	30
Miscellaneous Cases	203
Advice Cases	36
Total	1,522

CLAUDE ROGERS, *House-Surgeon.*

OATMEAL, BONE, AND MUSCLE.—Liebig has shown that oatmeal is almost as nutritious as the very best English beef, and that it is richer than wheaten bread in the elements that go to form bone and muscle. Professor Forbes, of Edinburgh, during some twenty years, measured the breadth and height, and also tested the strength of both the arms and loins of the students in the University—a very numerors class, and of various nationalities, drawn to Edinburgh by the fame of his teaching. He found that, in height, breadth of chest and shoulders, and strength of arms and loins, the Belgians were at the bottom of the list; a little above them, the French; very much higher, the English; and highest of all, the Scotch and Scotch-Irish, from Ulster, who, like the natives of Scotland, are fed in their early years with at least one meal a day of good milk and good oatmeal porridge. Speaking of oatmeal, an exchange remarks that a very good drink is made by putting about two spoonfuls of the meal into a tumbler of water. The Western hunters and trappers consider it the best of drinks, as it is at once nourishing, unstimulating, and satisfying. It is popular in the Brooklyn Navy Yard, two and a half pounds of oatmeal being put into a pail of moderately cool water. It is much better than any of the ordinary mixtures of vinegar and molasses with water which farmers use in the haying or harvest field.—BOSTON JOURNAL OF CHEMISTRY.

To Correspondents.

ALL Communications intended for the Editor should be addressed to the care of Messrs. SMITH, ELDER & Co., 15 Waterloo Place, Pall Mall.

All inquiries respecting Advertisements should be sent to GEORGE BUTCHER, 4, Crane Court, Fleet Street, E.C.

THE MONTHLY REVIEW
OF
DENTAL SURGERY.

No. III. AUGUST, 1873. Vol. II.

ANNUAL CONVENTIONS.

The success that has followed the recent Annual Meeting, in London, of the British Medical Association, shows clearly the advantages to be derived from combined action on the part of a profession. The Annual Dental Convention of the United States shows quite as clearly that our own department of surgery may, with equal advantage, have these gatherings of the members of the profession for the promotion of scientific work and social intercourse.

Unfortunately, in this country, we have no such meetings of Dental Surgeons, and the only body that, as matters stand, could promote such a convention, has hitherto studiously kept aloof from such a movement. We have not even an annual reception or conversazione at our Odontological Society, where greater numbers might be attracted than on ordinary occasions, and since the Licentiates' Dinner died a natural or unnatural death—as our readers may choose to regard it—no attempt has been made to have such a meeting or convention as would bring dental practitioners, from all parts of the country, together on one common ground of good feeling and love of social intercourse. If it is beyond the province of the Odontological Society of Great Britain to take any steps to promote such annual or semi-annual gatherings, it would surely be advisable that some measures should be adopted outside of the Society to promote such a desirable object.

ABSTRACT OF A CLINICAL LECTURE ON ABSCESS OF THE ANTRUM,

Delivered at the Dental Hospital of London, July 9th, 1873,
by Charles S. Tomes, M.A.

Having lately met with three cases of suppuration in the antrum in quick succession, I propose to briefly describe them to you, not as being cases in themselves at all remarkable, but as giving a fair idea of the average examples of this disease with which you will meet in private practice, amongst a class of patients who seek professional aid before they have gone through any very considerable amount of suffering.

For if you form your idea of this disease from the descriptions in your text-books, and from the cases which you may see amongst out-patients drawn from the poorest quarters of London, you will probably have an exaggerated notion of its average severity.

But before proceeding to describe my own cases, I will read to you, as an instance of the very serious results which may ensue from neglected antral abscess, a case described by Mr. Salter (Guy's Hospital Reports, 1867, p. 101),—(case quoted) —in which complete loss of vision on the affected side, and a permanent fistulous opening through the cheek into the antrum, the result of necrosis and exfoliation of its anterior wall, had followed upon an exceedingly severe case of antral abscess; and I would remind you that death has been known to result from abscess in the antrum.

Case 1.—M., æt. 30.—About two years ago, suffered from what he regarded as an ordinary alveolar abscess—had severe throbbing and lancinating pain, with great swelling of right side of the face. As he was on the point of starting on a sea voyage, he did not consult a medical man, and, after some weeks of suffering obtained relief for the time by a spontaneous evacuation of pus into the mouth. Ever since that time he has been excessively liable to attacks of swollen face, specially brought on by any exposure to cold, whilst a slight discharge of pus into the mouth is more or less constantly occurring.

On examination, the right side of the face was seen to be puffy and swollen, while there was considerable tenderness on pressure over the side of the nose, and the malar process. On looking into the mouth, not the least indication of swelling was to be found—nothing was to be seen save a minute orifice, from which pus exuded, opposite to the roots of the first upper molar, and situated just at the point of reflexion of the mucous membrane from the gums on to the cheek. A fine probe passed into this sinus led directly upwards and a little outwards, towards the base of the malar process, and straight away from the root of the teeth.

It was not a case of alveolar abscess, because—1. Though the swelling of the face was considerable, there was no sign of swelling in the mouth. 2. None of the teeth or stumps were tender on pressure. 3. The direction in which the sinus led rendered it unlikely that the teeth were directly concerned.

The diagnosis lay between a limited caries or necrosis of the superior maxilla somewhere near the base of the malar process, or abscess of the antrum, whilst the latter was indicated by the history of periodic discharges of pus; moreover, no diseased bone could be touched by the probe, nor had the orifice of the sinus that peculiar aspect which is so characteristic of diseased bone.

I extracted the stumps of the first upper molar, and passed a fine probe up through the socket of the anterior buccal fang into the antrum, giving exit to a few drops of pus. On freely enlarging this opening, about six drachms of healthy, creamy pus, quite destitute of offensive odour, escaped.

On syringing out the antrum with a syringe, the nozzle of which happened to exactly fit the orifice, much resistance was felt, and no fluid passed into the nose,—proving that the natural opening into the middle meatus of the nose was occluded, and thus accounting for the absence of a very common symptom, namely, the escape of pus through the nose, and its expectoration when it happens to drip down behind the velum.

Case 2.—F., æt. 38.—About nine months ago, appears to have had the usual symptoms of acute suppuration in the antrum, which were not, however, fully recognized by her medical attendant, and nothing was done save fomentations, &c. The pus eventually found its way into the nose, and escaped partly by the nostril, and part was expectorated. This pus was horribly offensive, and the medical man, after treating the case for upwards of six months by various sprays and stimulating injections thrown into the nostril, as though it were ozæna, arrived at the conclusion that it might be due to suppuration in the antrum.

When first seen by me, the discharge, still very fœtid, had diminished in amount to about two drachms a day; the extraction of the roots of the first molar gave exit to a few drops of dark grumous exceedingly foul-smelling fluid; and some little fragments of dead bone, which could be reached through the vacated sockets, were picked away. Under the use of detergent injections three or four times a day, the discharge has diminished to a very small amount, but the use of stimulating injections, which would be otherwise desirable, is practically prohibited by the extreme freedom with which they pass into the nose, causing extreme pain by acting on its sensitive mucous membrane.

Case 3.—F., æt. 40.—Face rendered unsymmetrical, from bulging about the canine fossa, and side of nose; marked tenderness here, and over malar process. These symptoms had been present for several months, and on the left side the nose had become slowly occluded, so that the patient believed herself to be suffering from nasal polypus. There was slight pain and a sense of tension, but no throbbing. No pus had, to the patient's knowledge, escaped into the nose, but the patient was one of those on whose accuracy of observation but slight reliance could be placed.

Believing the case to be one of chronic abscess of the antrum, and finding considerable swelling over the end of the root of the second bicuspid, that tooth was extracted, and brought away a very large abscess sac at its end, leaving a small opening into the antrum, from which, to my disappointment, only a few drops of rather offensive pus came away. On syringing it out, one syringeful after another went in, but nothing came out, and the whole length of a common sized silver probe passed in readily. In point of fact, the antrum, though enormously dilated, till it would hold more than three ounces of fluid, was perfectly empty. How or when its contents, which had dilated it and distorted the face, had escaped, I cannot tell, but it had taken place without the patient's knowledge. Now that it is empty it will probably shrink down again to its former dimensions.

I do not propose now to enter into the whole question of abscess of the antrum, but merely to call your attention to one or two points illustrated by these cases. In the first place, the escape of the accumulated fluid into the nose is by no means a constant symptom of the disease, for the opening into the nasal fossæ not uncommonly is absolutely closed, and when it is so, as in the first case related, the pus being protected from the air, will remain free from offensiveness even though it be an old accumulation. These cases, in which the pus entirely fails to find an exit into the nose, may so far be considered to support Otto Weber's supposition, namely, that suppuration usually takes place between the periosteum and the bone, and not from the free surface of the mucous membrane, in which latter case it would seem probable that it would find in some degree at all events an exit through the normal opening into the middle meatus of the nose.

And it must also be remembered that, the fact that the accumulated discharge ultimately oozes out through this opening in many cases, by no means proves that it was not formed beneath the periosteum; for what can be more likely than that the distended membrane beneath which it lies should give way at this point, where alone it lacks bony support? whilst necrosis will by no means necessarily, or even probably, follow the peeling up of the periosteum from a bone so richly supplied with blood from various sources as the superior maxilla.

Another point to notice is that these cases were all tending towards a spontaneous though excessively protracted cure. Even in the patient whose malady was so long regarded as ozæna, matters were slowly mending. This is the general result of all but the severest cases of antral abscess; that is to say, the discharge makes its way out somewhere, and very gradually diminishes in amount till at last it ceases, while during the time that it is imperfectly escaping and getting mixed with air, it is generally insufferably offensive. It is with a view to giving free and rapid exit to fluid, and avoiding all chance of decomposing accumulations, that you are told to make large, free openings into a suppurating antrum,—Otto Weber even advising so large an opening that the little finger can be passed in through it.

Yet, as you see by these cases, a cure may take place, though the orifice of exit be very small; and in this connexion I may mention a case, which was shown to me by the kindness of Dr. Bogue, while I was in New York. The breath of this patient had been rendered insufferably offensive by the slowly escaping discharge, which, I presume, found its way out into the nose. Dr. Bogue did not, however, extract any teeth, but contented himself with drilling up into the antrum through the roots (I think of two teeth), and syringing out the cavity through these small openings. The teeth were subsequently filled, and the success of the treatment places it, to a certain extent, out of the reach of criticism; yet I would not advise you, on the strength of a single successful case, to violate the sound principle of surgery which forbids you from making small openings into large suppurating cavities, and so running the risks attendant upon decomposition taking place in a partly confined cavity; but if you wish to insure a speedy cure, make a free opening, at the least as large as a goose-quill.

The symptoms of ordinary cases of abscess of the antrum are by no means violent, and many such cases are overlooked, and in the long run undergo a spontaneous cure, after subjecting the patient to the annoyance of offensive breath, &c., for months or even years. It is not always possible to make a certain diagnosis without an exploratory puncture; but even if a puncture be made, and the antrum after all be found to be healthy, there is no great harm done, for as a rule no inflammation follows it. Thus, very recently, one of the students at this hospital, whilst cleaning out the root of a tooth by drilling it out with a broach, found, to his surprise, that the broach would pass in for an indefinite distance—in point of fact, he had unwittingly imitated Dr. Bogue's operation, and drilled into the antrum through a root of a first molar. No ill results whatever have resulted from this misadventure.

My object in bringing these cases before you is to point out how few and how slight the symptoms of suppuration in the antrum may be, and, indeed, often are; and if you will bear this fact in mind, you may be the means of detecting many unsuspected cases, and curing many sufferers from one of the maladies most unpleasant both to patient and friends, namely, a horribly fœtid discharge from the nostrils; for it is probable that many of the supposed cases of ozæna are really unsuspected antral abscesses.

THE ELEMENTS OF GOLD FILLING.

By Mordaunt Stevens, M.R.C.S., L.D.S., M.D., D.D.S., Rue de Luxembourg, Paris, late House-Surgeon, Dental Hospital, London, Dental Surgeon to the 8th Arrondissement, Paris, &c.

(Continued from p. 5.)

DEAD NERVES IN TEETH AND STUMPS.

In the last chapter I endeavoured to show briefly how a diseased nerve can be devitalized with arsenical paste and then removed with a barbed nerve extractor, the nerve cavity being afterwards temporarily filled with cotton and creasote capped with mastic, leaving the tooth ready to be stopped with gold at the next sitting. We will now discuss the best means of treating those cases in which on exploration we find the nerve already dead. In a simple case of this kind, we have only to excavate the cavity, extract the dead nerve, and keep the nerve cavities for some days well soaked with creasote. This is best accomplished by wrapping a little cotton round a probe, dipping it in creasote, and working the cotton up and down the root, like the piston of a syringe. Another piece of cotton dipped in creasote should now be forced up the root and left there, the cavity itself being filled with cotton dipped in varnish. These cottons should be changed every day till the odour left by the dead nerve has entirely passed away; the roots and cavity may then be permanently filled. So much for simple cases, where the death of the nerve has not been followed by periostitis and alveolar abscess.

These complications are more troublesome to the dentist than any of the many diseases to which the teeth are subject, and we require, to overcome them successfully, all the patience and skill we can muster.

Perhaps the best way to explain the method of treatment I generally employ is to give the details of an interesting case of this kind I treated some months ago.

Madame R., a young French lady, came to me to have three of her six-year old molars and two bicuspids extracted under the influence of gas. On examination, I found that all the five teeth, besides being mere shells, contained dead nerves, three had chronic abscesses over their roots, from which the matter was literally welling out, the effluvium being far from pleasant. I told the lady the teeth might be saved if she could give me a sufficient number of sittings. She consented, and I proceeded to open up the nerve cavities, and remove as much as I could of the dead and putrescent nerves. If I had then followed the usual routine, and put cotton and creasote, or carbolic acid capped with cotton and varnish, in these cavities, my patient would inevitably have had a swollen face next morning. I therefore gave her a very weak solution of carbolic acid, giving her instructions to wash her mouth frequently with it, and come back and see me in two days. At the second sitting, I placed some cotton, dipped in the same solution, *loosely* in the cavity, showing the patient how to change this dressing herself every two hours. No varnish and cotton was placed over this dressing. At the third sitting, I pumped up creasote into the roots, telling the patient to go on dressing the tooth as before. At the fourth sitting, cotton dipped in creasete was left in the roots, *loosely* capped with varnish and cotton. At the fifth visit, I cleared out the roots more thoroughly, packing the cotton firmly in. At the sixth sitting, finding everything going on favourably, I cleared out the three roots of an upper molar, filling their apices with cotton dipped in weak osteoplastic, the lower part of the root being, on a subsequent visit, filled with gold, serving as retaining points for an adhesive gold filling. The other teeth were treated in the same manner during the next sittings, and the teeth filled with gold. The teeth have now been filled some months; no pain has ensued; no trace of the abcesses remains; the unpleasant effluvium has also disappeared.

In cases like these, when teeth with two or more roots have been discharging freely for some time, I never seal up the cavity at first, but gradually check the discharge, as shown above. Secondly, I find filling the apices of the roots of all but single-fanged teeth by pumping up weak osteo and then finishing off with gold a better plan than filling the root entirely with gold, as it is difficult to force foil up to the apex of the fang. Thirdly, I prefer *sacrificing part of the tooth*, so as to obtain free access to the nerve cavities, to leaving the dead nerves to decompose, causing foul gases, which, escaping through a vent-hole carefully drilled for the purpose, make the smell of the patient's breath most offensive to all who approach him.*

Whilst we are on the subject of dead nerves, there is another point upon which I will briefly touch, viz., roots. Many practitioners, whilst preparing a mouth for artificial teeth, consider it best to leave most of the roots in the mouth. Now, there is not one dentist in twenty who takes the trouble to clean, treat, and fill these roots; they are merely filed down flush with the gum, and left to decay. The consequence is, that it is now a common belief amongst patients that false teeth have an offensive odour, many persons avoiding their use for this reason. The majority of American dentists extract all roots before inserting artificial work, giving their patients, when without their sets, the appearance of extreme old age. Well, much as this wholesale extraction is to be deplored, I would prefer even that amount of unjustifiable butchery to leaving a lot of unfilled stumps in the mouth.

I make it a rule never to excise a tooth till the nerve has been destroyed with arsenical paste as soon as the crown is removed. I extract the nerve, and, if any bleeding ensue, fill the root with cotton and carbolic capped with varnish; next day the roots may be filled with gold. In cases where the nerves in the roots have long been dead, I tell my patients to wrap a piece of cotton round a needle (the temper of which has been drawn), and pump up a solution of carbolic acid. After a few days, provided the peridental membrane be alive, these roots may be treated and filled quite easily, as we have such ready access to them.

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* Mr. Woodhouse, in his most interesting paper on Exposed Nerves, says, he finds it best in cases where "*it is impossible to get at the cavity in the root*," and in teeth *which have long been dead*, to leave a vent-hole perforating either the stopping or the tooth. Mr. Woodhouse, however, does not tell us whether these difficult cavities could not be reached by cutting right down on them, or why these teeth which have long been dead should not be cleaned, treated, and filled as well as their neighbours. I have no doubt that it would be most interesting to the readers of the Review to hear clearly from such a high authority as Mr. Woodhouse, whether, in his opinion, *when our patients are willing to give us the necessary number of sittings*, we are justified in resorting to this system of vent-holes, or whether he looks upon it merely in the light of a "*pis aller*."

Take a case dentists see every day. A patient comes to us with a piece fitted over several inflamed suppurating roots, and kept up, for instance, by bands fitting round some poor decayed teeth. Life is a burden to him; he cannot masticate his food, gets dyspeptic, and, as a natural consequence, cross and irritable. If we were to propose to take out his remaining teeth, he would certainly refuse, saying that, bad as they are, they are his only aids to mastication, the false teeth being worse than useless to him for that purpose. In two or three weeks these teeth and stumps may be treated and filled, a nice suction-plate inserted, and our patient restored to health and happiness, ready to pay any fee in his power to his benefactor. I am quite ready to grant that in many cases people cannot afford to pay for all this time and labour, but we still have the consciousness of having rendered an inestimable service to a suffering fellow-creature. To sum up, I think it ought to be a universal rule with us never to leave an unfilled root in the mouth: if too bad to be filled, it ought to be at once extracted.

Root filling, supposing we use osteo-plastic and cotton in teeth with two or more fangs, is a comparatively easy operation; all the difficulty lies in the preparation of the nerve cavity. When osteo-plastic is used, a little cotton wool should be wrapped round a soft, delicate probe; this should be dipped in very liquid paste, and worked up and down in the cavity, as I have said before, like the piston of a syringe; in this way the osteo-plastic is forced up to the apex. A little cotton dipped in thicker paste is now carried up and left in the root, the saliva being carefully excluded.

When we decide on filling the root with gold-foil, the best plan is to take little strips of No. 4 Non-ad. Abbey's gold, and force them up carefully, using S. S. White's nerve pluggers. Each piece should be malleted. Some operators make the *last pieces* adhesive by passing the gold through the flame, but the whole root can be filled with soft gold, if for the last piece we use a somewhat longer strip.*

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* Filling roots with gold will be described in greater detail in the chapters on Adhesive Gold.

(*To be continued.*

ODONTOMES.

(TRAITÉ DES TUMEURS. Par PAUL BROCA.)

ODONTOMES GENERALLY.

II.—*Anatomy and Physiology of Dental Bulbs.*

(Continued from p. 54.)

Third Period, Coronary.—This period is characterized by the formation of the crown. It begins with dentification, which is effected by the thickening of the cortical layer of the bulb. There may be seen between the preformative membrane, and the row of dentinal cells, a layer of ivory or dentine which is soon covered with a thin layer of enamel.

Dentine does not appear simultaneously on the entire surface of the bulb. It must not be forgotten that the bulb supports one or more projections equal to the cusps of the future tooth. The formation of the dentine commences exactly at the top of each of these projections, where appears at first a tiny circular shell, so thin that it can only be seen with the microscope, and which is flexible and pliable, although it has the structure and chemical composition of ivory. This shell, whose thickness increases with its age, soon becomes visible to the naked eye, at the same time extends circularly in such a manner as to cover, gradually, the whole summit of the projection, constituting what is called a *cap of dentine.* The dentinal cap—convex above, concave below—offers the greatest thickness at its central part, which has been formed longest, and from there it gradually thins, till at the edges it is so thin that it ceases to be observed by the naked eye. By its concave surface it adheres to the layer of dentinal cells. By its convex side, it first corresponds to the preformative membrane; but as soon as it has acquired a length of some millemètres, it is separated from it by the growing layer of enamel. (In certain herbivora, the formation of enamel is much slower.)

The dentine or ivory does not take long to acquire a hardness superior to that of the most compact bone. Its structure is too well known for it to be necessary to describe it. It is sufficient to call to mind that its tissue is characterized by the presence of innumerable small canals, nearly always rectilinear, slightly sinuous, very near one to the other, united here and there by oblique anastomoses, parallel between them, perpendicular to the surface of the pulp, and also on the surface of the crown. In order to recognize them, it is necessary to study successively a transverse section and a longitudinal section, for the canals present entirely different aspects, according as the section is perpendicular or longitudinal in its direction. When one wishes to limit oneself to establishing the existence of dentine, it is sufficient to employ magnifying power of 100 to 150 diameters; but higher power is indispensable to determine certain characters and to avoid certain errors, which might become serious in the study of Odontomes. It is, above all, necessary to observe two conditions which may more or less affect a resemblance to bony corpuscules.

First, upon transverse sections the canals present themselves as little round holes like those of a sieve: when we examine the termination of these tubes on the surface of the dentinal cap, above all on the pulp sides, we find that their terminal orifices, instead of being regularly round, are more or less split up, angular, star-like (Fig. 8); and this aspect, following the expression of MM. Robin and Magitot, is not without analogy with that which is presented by osteoplasts on the preparation of fresh bone. (Robin and Magitot, "Mém. sur la Genèse et le Développement des Follicules Dentaires," in the *Journal de Physiologie* of Brown-Séquard,' 1860, p. 665, pl. XI., Figs. 3, 4 and 5.)

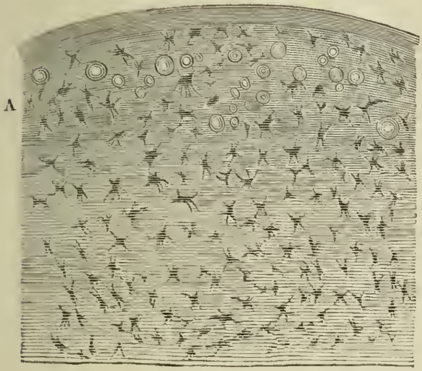

Fig. 8.

Secondly, in the longitudinal section of completely formed teeth, the external extremity of the ivory canals borders on a zone which is situated underneath the enamel of the crown (Fig. 9, D), or under the cementum of the fangs (Fig. 12, B), and which resembles, up to a certain point, the appearance of horny tissue. In fact this zone is pierced with blackish cavities, irregular, starlike, sometimes branchy, where the canals probably open, and whose nature is not yet sufficiently determined. When one sees at the same time, in the same preparation, as in Fig. 12, these irregular cavities and the osteoplasts of the cementum, the distinction is easily made. It is not the same in examining certain pathological portions, where at the one part the terminal lacunæ of ivory can occupy a very thick zone, and where at another part one is deprived of the form of comparison which supplies upon normal teeth the study of the neighbouring cementum. These remarks explain how skilled observers can admit the existence of cementum elements in an odontome exclusively composed of ivory and enamel.*

We find besides in ivory in the neighbourhood of the enamel, globulous bodies, very unequal in volume, and grouped in an irregular manner; these are *globules of dentine.* There is an epoch in the development of ivory where they occupy the internal surface of the dentinal cap, and where they are scattered over the surface like little pearls (Fig. 8, A). They are then in contact with the dental pulp. The connexion which they effect with the ivory canals is difficult to establish. It is generally admitted that the canals pierce through the globules and beyond, or at least they are not the swellings of the walls of the canals. When the layer of dentine grows in thickness, the zone which encloses the globules gradually recedes from the pulp; this zone crossed by the ivory canals, is always very close to their peripheric extremity, and is shown at C (Fig. 9). We shall not touch upon the discussions relative to the origin and evolution of the dentine glo-

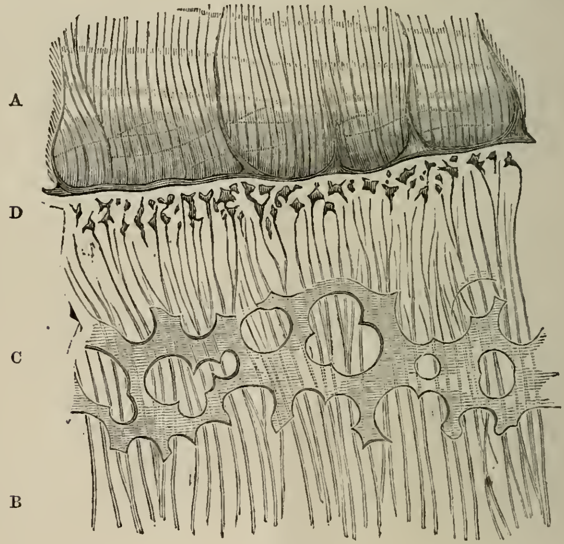

Fig. 9.

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* Compare our figure 12 with the figure 194 in the "Eléments d'Histologie," of Kölliker, Trad. Fr., Paris, 1856, 8vo., p. 424. The letter *b* in this last figure points out the terminal lacunæ, which Kölliker designates under the name of "Interglobular Spaces." We read in the explanatory

bules. We shall confine ourselves to showing them, and to say that they may often be observed in great numbers in the dentified odontomes *(odontômes dentifiés).*

Description of Fig. 8.

Inferior side of the edge of a dentinal cap taken from the embryo of a pig at three months, 500 diameters. The star-like openings of the ivory canals may be seen. The very refracted spherical globules which are seen in the zone A are the globules of dentine.—(Robin and Magitot.)

Description of Fig. 9.

Ivory and Enamel. Longitudinal Section of an Adult Human Molar, 500 Diameters.

A Enamel formed by the juxtaposition of parallel prisms, presenting transverse striæ shown by light flexible shadows. These striæ are often much more wavy.
B Canaliculi of the ivory, parallel between them, and presenting some bifurcations and oblique anastomoses.
C Zone of the Dentinal globules.
D Terminal lacunæ of the ivory canaliculi situated immediately below the enamel.

(To be continued.)

DENTAL SURGERY.

AMAUROSIS CURED BY THE EXTRACTION OF FANGS.

By Frühauf, Nordhausen.

(Deutsche Vierteljahrsschrift.)

Miss M., who had resided some time in the neighbourhood of Nordhausen, had, in consequence of diminished power of vision in the left eye, consulted a physician, and had been under treatment for some time, but, instead of improving, had entirely lost the sight of the eye, when she consulted me on account of some trouble with her teeth. I extracted first the fang of the left canine tooth which had an abscess at its apex, and afterwards eight other fangs from the upper jaw. The next morning she came joyfully to me with the exclamation, "I can see again." I found that the pupil had regained its normal condition, and that the power of vision was re-established.

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note: "*b*, interglobular spaces resembling osseous cavities." Wedl points out the facility with which certain longitudinal striæ of ivory can be confounded in the transverse sections with osseous corpuscules, and mentions that Czermak, after having maturely studied the different causes of error, has declared that he has never seen *veritable* osseous corpuscles in ivory. (Wedl, Histologische Pathologie, Trad. Anglaise, Lond. 1855, 8vo., p. 511). I cite these passages to show that the respective determination of the elements of ivory and cementum is not always exempt from difficulty.

ON THE APPLICATION OF THE RUBBER-DAM.

By S. J. HUTCHINSON, L.D.S.R.C.S.

ONE of the chief drawbacks to this admirable and indispensable invention, is the great delay caused in adapting it to the teeth when placed in close juxtaposition, and for this reason it is often thrown aside when cavities on the grinding surface of the inferior molars especially would be much more certainly filled properly.

It is possible that the following plan has already been used by many, but never having seen it published, I am induced to detail it for the benefit of those who have not yet tried the method, having myself derived such comfort in many very difficult cases.

The first step is to apply one of Royce's clamps to the tooth which requires filling; to this clamp I always tie about half a yard of silk, as suggested by Mr. Greenfield, so that, in case of the clamp slipping up the tooth, it may be recovered if swallowed.

After putting the clamp in place, one hole may be punched in the corner of the rubber, say three inches from each side of the corner; now thread the silk through the hole, and stretch the rubber between the two forefingers, so as to slip it over the clamp. Here arises the sole difficulty I have found, for the posterior margin of the rubber rests *on* the tooth behind, instead of between it and the one to be filled, but a burnisher curved on the flat will gently draw it into place. There is now the rubber at a great stretch, extending between the two teeth behind and in front, and on each side it goes under the claws of the clamp, and really acts most efficiently; just at first there is an inclination to ooze where the rubber passes in front of the claws, but a flake of amadou will plug this effectually.

In first trying this plan, operators will find the part passing in front of the tooth will stretch upwards, so as to occlude the light somewhat, but enough outward traction can be used at least to keep the rubber flat on the surface of the teeth.

I cannot conclude without according the fullest meed of praise to the inventor of the rubber-dam clamps, for although not always needful, I find them invaluable for use both on teeth above and below. One hint with regard to their use is advisable, which is, that operators should get some kind friend to fix one on their own teeth, in order to temper their infliction on patients with mercy.

A RARE CASE IN PRACTICE.

By Mrs. H. Hirschfeld, D.D. S., Berlin, Prussia.

(Dental Cosmos.)

Some weeks ago, a young lady, of the age of twenty, presented herself at my office to have her teeth attended to. In a few sittings the incisors were finished, and I proceeded to the second superior right molar. This had a large cavity, but it was desirable to save it, as it was the only superior molar she possessed, the lower being in comparatively good condition. This molar had been filled two years previously with amalgam, but this was subsequently lost. On inquiry, the lady asserted she had never experienced painful sensations in it, the constant collection of food being the only unpleasant thing about it.

On cleaning out the cavity, I found without difficulty the openings to the anterior buccal and palatine roots. The posterior buccal root was perfectly closed, as with a layer of dentine. A few turns of the burr-drill revealed the canal, from which exuded one small drop of blood, but with an entire absence of odour. This was remarkable, as the other two roots contained the grey offensive matter usually found in canals of dead roots. Entering this canal with a thin-pointed instrument, I found it penetrated farther than to the apex of the root. Fearing that injury might result to the surrounding tissues, I took a fine silver probe, with a rounded end, and gently forced it up. To my great surprise, it ascended in a slanting direction to the extent of eight centimètres, or nearly three inches, without obstacle or sensation to the patient. Had the root pierced the antrum, as frequently occurs, the direction of the probe would have been a straight one, and could not have been two inches before reaching the floor of the orbit.

At this visit the cavity was closed with cotton and sandarac, and time allowed for the collection of secretions if any existed. At an examination three days subseqúently, I found the tooth in exactly the same clear condition. By placing the probe on the external cheek and on a skull, I found it must have been up in the temporal fossa. I could not think of filling that canal, and desired to extract the tooth, but this the patient decidedly refused. I then placed cotton and sandarac in the two first-mentioned roots, closing the cavity with Hill's stopping, with directions to have it removed upon the occurrence of unpleasant sensations. I have not seen her since.

It would be very interesting to me to learn if any of my professional brethren have met with a similar case, and to know the final results.

TRACHEOTOMY FOR THE REMOVAL OF A TOOTH.

(Lo Sperimentale.)

Dr. P. Landi mentions a successful case of Tracheotomy, performed for the purpose of removing a molar tooth which had been twenty-four hours in the left bronchus of a child seven years old. The tooth slipped from the forceps at the moment of extraction.

THE SURGERY OF THE MOUTH.

By Francis Mason, Esq., F.R.C.S., Senior Assistant-Surgeon and Lecturer on Anatomy at St. Thomas's Hospital.

(Continued from p. 15.)

Papillōma, or Papillary Tumour of the Gum.

In the year 1862 I assisted at King's College Hospital my then colleague, Sir William Fergusson, to remove a curious growth of this character from the gum on the right side of the lower jaw of an old man. It had peculiar characters, which, as I have a note of the case, I can describe accurately. Sir William had never seen or read of such a tumour in this locality or elsewhere. It consisted of a great hypertrophy of the normal papillæ of the gum, and to the naked eye looked not unlike what may be described as a wet brush such as whitewashers use when left to dry. There were numerous white projecting hair-like processes, many of them nearly an inch in length, but the greater number were about one-third of an inch long. On pressing the growth, an elastic sensation was imparted to the finger. The tumour was readily broken down, and, parts of it being detached, ample opportunity was afforded of examining its structure microscopically. If Sir William Fergusson, with his vast experience, had then never met with such a case, surely the disease must indeed be rare, and no doubt a case of this magnitude (for it was the size of two walnuts) must be uncommon. Nevertheless, the pathological character of these papillary tumours is well understood, from the fact that although rarely met with in the gums, they occur in other parts of the body. They are said to be either hypertrophy of the normal papillæ, or they may be an entirely new growth. They consist of an aggregation of connective tissue covered with epithelium, the whole being supplied with vessels and nerves. An analogous form of tumour is met with in the ordinary warts usually noticed on the hands, but occurring likewise in other localities. Some time ago I removed from the abdominal wall of a girl, aged twenty, a congenital papillary tumour, the structure of which was similar to that just described, allowing, of course, for the difference in the situation. The case is reported in the Brit. Med. Journal for January 7, 1871.

The *difference of situation* is no unimportant matter. We are familiar with certain skin diseases—say psoriasis—which, belonging to the scaly or squamous variety, has, on the skin surface, the characteristic dry appearance; but apply a poultice to such an eruption, and we find that it soon acquires, by reason of the moisture, the appearance that the eruption on a mucous surface does. Cases of secondary syphilis, assuming the form of psoriasis, or lepra, frequently come under the notice of the surgeon. The skin eruption has the peculiar dry appearance; but on the muco-cutaneous surfaces, as at the mouth or the anus, and especially in the cavity of the mouth about the fauces, we find an eruption that is conclusive evidence of the presence of constitutional infection. Just inside the mouth, and in all probability about the fauces also, we detect the peculiar raised white semicircular or crescentic patches, and coincident with these we shall generally find that the patient has a similar eruption in the region of the anus, in the form of condylomata. There is little reason to doubt that the eruptions on the skin and mucous membrane are identical, and that the difference in the physical characters is due merely to the difference in locality.

I had the opportunity of seeing a case of papillary tumour of the gums at St. Thomas's Hospital, in March last. The patient was a man aged 32. The growth had existed for about six months, and was situated near the bicuspid teeth of the left side of the lower jaw. It was about the size of a cherry, and had the white shreddy appearance already noticed. I removed the growth, and the patient made a good recovery. The papillæ in the gums, here and there, are sometimes noticed somewhat enlarged, but the papillary tumour seems to consist essentially of an aggregation, and an excessive development of the various structures that make up the normal papillæ.

The treatment of such cases consists in freely removing the growth with the knife, and touching the surface with some escharotic, the most effectual being the actual cautery.

(To be continued.)

DENTAL SOCIETIES.

There are seventy-four Dental Societies in the United States; two in Germany, including Austria; none in France; whilst there is only one in Scotland; and one in England.

ON THE PRIMARY DENTITION OF CHILDREN.

By Francis Minot, M.D., Harv.

(Boston Medical and Surgical Journal.)

Authorities differ somewhat as to the order in which the first teeth appear, as well as to the time of their irruption. I have found the data given by Dr. Eichmann, founded upon the observation of 400 children, to correspond pretty exactly with my own experience; and it is sanctioned by the high authority of Dr. Schoepf Merei, of Pesth, by M. Trousseau, by Vogel, and others. Dr. Eichmann states that the twenty deciduous teeth make their appearance in *five groups,* at five distinct periods, and in the great majority of cases in the following order:—the first group consists of the two lower median incisors, which generally appear between the twenty-eighth and thirty-third week. In only three instances out of the 400 children did the first lower incisor appear as early as the twentieth week, the next tooth, however, not appearing before the thirty-first week. Judging from my own observation, I should put six and a half months as the average date of the appearance of the first tooth. The second tooth frequently follows the first within a week, but it is not unusual for two or three weeks to elapse before the first group is completed.

The second group consists of the four upper incisors, of which the two central ones are the first to appear, the completion of the whole group requiring from three to six weeks. When a child has six teeth, therefore, there are four in the upper jaw and two in the lower. Trousseau observes that this fact, known to every woman who has had the care of young children is strangely ignored by medical men, even by some who have written upon the very subject of dentition; and I am inclined to believe the observation is true of some practitioners of America as well as France.

The third group includes the two lateral lower incisors and the four anterior molars. Generally, the upper molars are the first to come, next the lower incisors, and, lastly, the lower molars.

The fourth group consists of the four canine teeth, of which the two upper are called the eye teeth, and the two lower the stomach teeth.

The fifth group comprises the four posterior molars.

Although there are exceptions to the above order, yet they are rare in healthy children. There is more variation in the age at which each group begins to appear, as well as in the length of time required for its complete evolution; but within certain limits the period is tolerably exact. The average age at which the first tooth pierces the gum may be stated at six and a half months, and the group is usually completed at seven months. The second group usually begins to appear at the age of nine months, and requires six weeks for its completion. The third group appears at the age of twelve and a half months, and is completed at fourteen months. The fourth group usually begins at eighteen months, and often requires eight weeks, and sometimes longer for its completion. The fifth group does not commonly appear before the age of twenty-six months, and also takes at least eight weeks before it is finished.

An important fact in the history of the primary dentition, and which must never be lost sight of by the practitioner, is, that after the irruption of each group, there is a pause of longer or shorter duration, which is quite constant for each interval. Thus between the first and second group there is a pause of two or three months. Between the second and third group the interval is of about two months' duration. Between the third and fourth group the interval is from four to five months. Between the fourth and fifth group there is a pause of five months. I will arrange all these data in a tabular form, so that you may more easily comprehend them, and retain them in the memory.

1st group begins at 6½ months—completed at 7 months.
Pause of 2 or 3 months.
2nd group begins at 9 months—completed at 10½ months.
Pause of 2 months.
3rd group begins at 12½ months—completed at 14 months.
Pause of 4 to 5 months.
4th group begins at 18 months—completed at 21 months.
Pause of 5 months.
5th group begins at 26 months—completed at 30 months.

During the intervals between the successive groups the process of dentition is arrested, and the symptoms to which it often gives rise subside. The child is tranquil, sleeps well, is free from nervous and inflammatory troubles. Now is the time when any change which is to be made in the diet, mode of life, &c., should be begun. The important question of weaning should always be considered in reference to this period. If the mother be robust, and have plenty of milk, the child may be allowed to nurse, at least in part, with advantage until the fourth group is completed, when there will be an interval of five months in which he will be free from danger of convulsions or diarrhœa, and will have ample time to get accustomed to his new diet. Unfortunately, in a large number of cases, especially in cities, the supply of milk and the mother's strength require the child to be weaned earlier, and then, if possible, this should be done immediately after the completion of the third group, when the interval, though shorter than that which follows the canines, will yet be sufficient to permit the infant to get used to an artificial diet before the fourth begins to appear. Of course, you will not be governed by the state of the teeth alone in this important question; other considerations, especially the season of the year, the mother's health, and the supply of breast milk, will have due weight; but I wish to urge upon you that in the case of delicate children, with a tendency to nervous or inflammatory symptoms, weaning can be much more safely accomplished during the intervals between the successive groups of teeth than at any other time. With perfectly healthy, and robust children such precautions are not always necessary, but in delicate, town-bred infants, in those which show any disposition towards convulsions, diarrhœa, hydrocephalus, or that indefinite array of symptoms which are often styled "scrofulous," they cannot be neglected without risk.

JOLYET AND BLANCHE ON THE ACTION OF PROTOXIDE OF NITROGEN.

(THE LONDON MEDICAL RECORD.)

THE authors made some experiments with reference to the action of protoxide of nitrogen as a respirable gas, and as an anæsthetic, points which are at present controverted.

In a first series of experiments they inquired whether seeds would germinate in an atmosphere of protoxide of nitrogen. Seeds of barley and cress were placed on moist filtering paper, under a receiver containing the gas chemically pure. For nine days in one case, and fifteen in another, they gave no signs of germination; while other such seeds, similarly placed under a receiver containing atmospheric air, germinated in two or three days. The former seeds germinated in their turn, if a few hundredths of oxygen were passed into the receiver. The same results were obtained with seeds in course of development; this being stopped in an atmosphere of the gas, and resumed when a little oxygen was introduced.

Animal respiration also fails in the gas. Birds died in it in 30 seconds; dogs and rabbits in 3 to 4½ minutes. In death the blood in the vessels was dark; there were the ordinary symptoms of asphyxia from breathing inert gases (nitrogen or hydrogen).

In a second series of experiments, the authors examined whether protoxide of nitrogen has the anæsthetic properties attributed to it, and said to render it valuable in surgery.

With this view they made various mixtures of protoxide of nitrogen and oxygen, containing 18 to 21 per cent. of oxygen, and 60 to 80 per cent. of protoxide.

Sparrows placed under receivers containing such gas behaved like others placed, for comparison, in receivers containing ordinary air, and died nearly in the same time, after producing equal quantities of carbonic acid, and exhausting equal quantities of oxygen.

Dogs remained in mixtures of protoxide of nitrogen and oxygen (in the proportions of air) during 20 to 30 minutes without showing, at any moment, an appreciable diminution of sensibility. The sciatic nerve, stimulated by a weak current, always gave signs of sharp pain.

In animals breathing the pure protoxide gas, it was observed that when the sciatic nerve was stimulated at different times, the sensibility disappeared between the third and the fourth minute, *i.e.*, at a time when the animal presented all the symptoms of asphyxia.

The experiments sufficed to show that the gas is not a true anæsthetic, and only produces insensibility by causing asphyxia. On extracting the gases from the blood with a mercury pump, and analyzing them, this was put beyond doubt. The arterial blood of dogs which had breathed in artificial atmospheres of protoxide of nitrogen and oxygen (in proportions of air) from 20 to 30 minutes, had dissolved about 30 to 35 cubic centimètres per cent. of the protoxide. On the other hand, the animals which died while breathing pure protoxide had, at death, 30 or 38 per cent. of the protoxide, or nearly the same quantity. But while the former had in their blood 18 or 20 per cent. of oxygen, the latter, at the moment when anæsthesia took place, had only 2 or 3 per cent. of oxygen in the arterial blood. Now, experiment has shown that insensibility takes place in dogs precisely when there is only 2 or 3 per cent. of oxygen in the blood (P. Bert).

From these experiments, then, it is inferred that the gas cannot maintain respiration either in plants or animals; and that if, when respired in the pure state, it produces anæsthesia at a certain moment, this is through the blood being deprived of oxygen, that is, through asphyxia. ALEX. B. MACDOWALL.

NOTES ON MEDICINE AND SURGERY.

HINGSTON ON REMOVAL OF THE TONGUE AND LOWER JAW.

(The London Medical Record.)

Dr. H. Hingston (Canada Medical and Surgical Journal, Montreal, Feb. 1873) records a noteworthy case of external cancer of the tongue in a man, aged seventy-one, necessitating the performance of this rather formidable operation. On a casual glance, he had all the appearance of a hale, hearty, fresh old age; yet, on close inspection, an ugly-looking cancerous mass was visible through the ever half-open mouth, which involved the whole sublingual region, extended along the lower jaw, from a little below the median line on the right side to the second molar tooth on the left, and eating away, in its progress upwards, the frænum and a considerable portion of the under surface of the tongue. This large open cancerous surface emitted an odour of a most offensive nature; the movements of the tongue were much interfered with; and speech, as a consequence, was indistinct; deglutition was painful and difficult; and pain of a severe and lancinating character troubled him by day and disturbed his rest at night. Mr. G. G. Gascoyen, of St. Mary's Hospital, London, was present at the operation, and considered it justified. Dr. Hingston describes the operation thus:—

The patient being placed under chloroform, with his neck well raised and head thrown back, I made a vertical incision, in the median line, through the lower lip, across the chin to the hyoid bone; another at right angles to the former, along the lower margin of the body of the inferior maxilla to the ramus; and a third, similar in direction, but of less extent, on the right side. The cheeks were separated from the jaw along the whole extent on both sides, and with them the levator menti, depressor labii inferioris, depressor anguli oris and platysma myoides, as far as the anterior margin of the masseter muscle, on the left side, and the mental foramen on the right. The knife was then passed within the jaw and made to sweep along close to the bone. The genio-glossi and hyoidei, genio-hyo-glossi, myo-hyoidei and digastrici were divided, after a piece of twine, previously passed through the tongue, had been entrusted to an assistant. The bone was then sawn through on the left side at the ramus, and at the right at the mental foramen.

The tongue now engaged attention. Drawn well forward, with the cord still through its tip, I divided its substance and investing mucous membrane at its base, and passing the chain of the écraseur through the aperture, divided the hyo-glossus, and genio hyo-glossus of the left side. Notwithstanding the employment of the écraseur, blood spouted from the cut lingual, but was readily arrested by a ligature.* The chain was then used in the same way on the right side. The advantage of dividing one side at a time was evident. Blood spouted from the linguals as if they had been divided with the knife, but the hæmorrhage was arrested in one before the other was divided. The stylo-glossi, with any *débris* of mucous membrane, were divided with the knife, and the tongue was removed. There was very little loss of blood at the time, and not much oozing afterwards. The soft parts were brought into close approximation by interrupted sutures at short distances, and sufficient dry lint was inserted to keep the lower lip, chin, and cheek from falling in. The patient was then placed in a prone position in bed. A couple of hours afterwards I proceeded to feed him. On opening his mouth and looking across the floor of lint, the whole epiglottis, from its broad, rounded upper extremity to its narrow thyroidean attachment, could be seen with ease. It stood almost erect, and like a watchful sentinel, bending slightly, as is usual in ordinary respiration, over the aperture whose function it is to guard and protect. The elastic feeding-tube attached to the stomach-pump, pressing against the epiglottis, gave no trouble, produced no spasm, no effort at coughing, no resentment of any kind, but it permitted itself to be handled as if dispossessed of sensibility altogether.

The patient made a surprisingly rapid recovery. Union took place throughout the whole extent of the horizontal wounds, and throughout all but the most dependent part of the vertical incision, by first intention. The two ligatures came away on the ninth day, and on the following day he left the hospital, cheerful and happy, for his home near Rouse's Point. More than four months have now elapsed, and so far there is no appearance of a return of the fell disease, for the removal of which the patient had submitted to the knife and saw. He came to Montreal yesterday at my request. He presents a healthy appearance, swallows without difficulty, and evidently to good purpose, as his well-conditioned state attests. He is now before you, that you may see the inconsiderable deformity which now remains, and hear to what extent speech is restored, notwithstanding the entire ablation of the chief organ which gave it articulate utterance.

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* The third or fourth time only I have used the ligature within the last six years, acupressure having always sufficed.

BRIGHAM ON THE TREATMENT OF HARE-LIP.

(The London Medical Record.)

Dr. C. B. Brigham (The Western Lancet, March, 1873), describes, in an interesting paper on hare-lip, an operation for the cure of that deformity, which is a modification of Malgaigne's method and the procedures in which the principle of the utilization of the parings is adopted. After some remarks on the well-known alleged causes of this deformity, the complications that are met with, and the most desirable time for the performance of the operation, Dr. Brigham thus describes his method of operating:—"In cutting the flaps, the incision should be made from above downwards (Malgaigne's method), the knife being held slantingly (Henry's method), so as to make a bevel, as it were, of the edge of the flesh; and then, as we are completing the incision, the flaps should be left united to the mucous membrane of the lip by a narrow isthmus. If the two lips be on the same line, these hanging flaps may merely be approximated and kept in place by a suture or two; if they be not on the same line, then one flap (its outer edge being refreshed) must be placed above the other, after Mirault's method, and kept in this position when the sutures are being placed at the end of the operation. In the former case, there will be a superabundance of tissue, which may be snipped off with a pair of fine scissors a few weeks after solid union is obtained; this last manner of procedure is, I think, an original one." In cases of double hare-lip, where there is much protension of the intermaxillary bone, Dr. Brigham advocates making, as a preliminary step to the operation, either pressure on the part for several hours daily, or cutting a triangular piece from the vomer. As regards the sutures, those of horsehair are what Dr. Brigham prefers and warmly advocates. He wishes to bring to the notice of the profession the use of sutures of horsehair, taking the hairs fresh from the horse's mane or tail. He believes this idea to be original.

[These sutures have for many years past been used in the Dublin surgical hospitals. The reporter has frequently used them at Richmond Hospital, and, when a student, saw them first employed in the Meath Hospital by Mr. Porter and the late Mr. Maurice Collis. The reporter fully indorses what Dr. Brigham states as regards their efficiency.—*Rep.*]

Dr. Brigham gives in his eminently practical paper the details of two cases of double hare-lip, both of which were successively operated on, and the paper is illustrated by photographs of one of the cases taken before and after operation, which fully attest the excellence of the result obtained.

WILLIAM STOKES.

NECROSIS OF LOWER JAW.

(NEW YORK MEDICAL RECORD.)

AT a recent meeting of the New York Pathological Society, Dr. Post presented a specimen of Necrosis of Lower Jaw, with the following history:—Eliza McGowan, aged 7 years, was brought to my clinic, January 16th, 1873. She had a great swelling on the left side of her face, evidently of an inflammatory character, with a sinus behind the ramus of the jaw. On opening the mouth, dead bone could be seen and felt, corresponding with the left side of the lower jaw. The swelling commenced last July, when she had a molar tooth extracted. I introduced into the mouth a chiropodist's forceps and seized the denuded bone, and with a twisting motion, applied with some force, I succeeded in extracting this large portion of dead bone, including the whole mass of the jaw from the left temporo-maxillary articulation to the space between the anterior and posterior bicuspid teeth. A week after the operation the inflammatory swelling had subsided, and I found that new bony matter had been formed along the base and ramus of the jaw, so as to complete the outlines of the bone, except the alveolar portion. Nothing is known as to the cause of the necrosis in this case. The patient had not taken mercury, and had not been exposed to the fumes of phosphorus.

GLYCERINE OF BORAX IN FACIAL ERYSIPELAS.—Prof. D. M. Salazar, of the Hospital Nacional, Madrid, reports that he has cured eight cases of facial erysipelas in 48 hours by this remedy. Notwithstanding the rapidity with which the affection disappeared, there were no consecutive pathological affections. In one case, the disease had existed three days before treatment was commenced, and there was bilious vomiting, intense cephalalgia, high fever, inflammation of the entire face, and some phlyctenulæ in the vicinity of the right lower eyelid and the root of the nose. He applied the solution to the diseased parts with a brush and then covered them with a mask of raw cotton. After 24 hours all the symptoms, local and general, were notably diminished, and the next day all the phlyctenulæ had disappeared and desquamation was commencing. All medication was then discontinued, except that a decoction of sambucus and althæa was used as a wash to favour the desquamation.—*El Amfit. Anat. Espan.*, March, 1873.

Local Anæsthesia.—Dr. Horvath, of Kieff, states (Centralblatt, March 22), that cutaneous anæsthesia without local pain may be produced more perfectly by the application of alcohol and glycerine, at a temperature of —5 C. (23° Fahr.) than by water, ether, or mercury.—*Berlin Medical Record.*

Subcutaneous Injections.—Dr. Constantin Paul recommends glycerine as a dissolvent for subcutaneous injections. He considers it to be far superior to water, alcohol, &c.; it is neutral, can be kept easily, and is of all liquids the one which approaches the nearest to the composition of subcutaneous cellular tissue. Glycerine is, indeed, almost a normal substance for cellulo-adipose tissues.

Reinfection in Constitutional Syphilis.—In a recent number of the Berliner Klin. Wochenschrift (46, 1872) Köbner has collected forty-five cases of syphilitic reinfection, and has added to them eight others which have come under his own observation. He believes thoroughly that syphilitic persons may be liable to fresh infection, but thinks that the proof of it lies in fresh induration, with its proper characteristics, attended by an incubation of several weeks' duration, In several cases the diagnosis could be confirmed by confronting the infecting with the infected person. Among other conclusions the following are drawn from his investigations:—

1. Constitutional syphilis is entirely curable.

2. He does not agree with Diday that there is any definite period, as twenty-two months, at which time the disease may be eradicated from the system. Nor does he approve of inoculation with syphilitic virus to determine whether the original disease was cured or not.

3. Many of the inveterate or so-called tertiary affections, as sarcocele and exostoses, are only to be regarded as local products or the remains of a previously existing disease, and not as symptoms of a general infection, and their significance is not of so much importance for the general system as for the special parts affected. This may explain a fact which is frequently observed, viz.: that sound children may be born of parents who have tertiary syphilis.

4. In more than two-thirds of all those cases where the cure was so complete as to render them liable to a second infection, the treatment was mercurial, and internal preparations were employed rather than the inunction method. The author therefore concludes that mercury is one of the best curative agents in syphilis.—*Schmidt's Jahrb.*, 2, 1873.

BROWN-SEQUARD'S NEURALGIC PILL.—℞. Extract. belladon., gr. $\frac{1}{6}$; extract. stramon., gr. $\frac{1}{5}$; extract. cannab. ind., gr. $\frac{1}{4}$; extract. aconit., gr. $\frac{1}{3}$; extract. opii, gr. $\frac{1}{2}$; extract. hyoscyam., gr. $\frac{1}{4}$ extract. conii, gr. i.; pulv. glyc., q. s. For one pill.—*Southern Med. Record.*

ULCERATIVE STOMATITIS.—Dr. Fordyce Barker says: In the treatment of this affection, for a few years past, I have mainly relied upon the sulphites either of magnesia or of soda, and I have cured my cases more rapidly than I formerly did when I depended upon the chlorate of potassa, borate of soda, &c.—*Southern Med. Record.*

FLUID EXTRACT OF ACONITE AS A LOCAL APPLICATION.—For two years past I have made numerous experiments with aconite topically applied. After requesting others to use it thus, I am enabled, from their experience and my own, to deduce the following results: All cases of swelled face arising from dental and neuralgic pains yield readily to a solution of the fluid extract and water, equal parts.—*Dr. E. J. Marsh, in Eclectic Med. Journal.*

ICE IN THE RECTUM FOR CHLOROFORM INTOXICATION.—The above means is recommended by Dr. Baillée in a recent number of LO SPERIMENTALE of Florence. The author asserts that there is no more active means of bringing back the patient to life. Slight pressure suffices to surmount the resistance afforded by the sphincter and introduce the ice. The ice melts in the bowel, and immediately the patient is seen to draw a deep breath, which precedes natural respiration and the re-establishment of the cardiac functions. Dr. Baillée recommends the same means in cases of apparent death in new-born children.

EXTERNAL APPLICATION OF CHLORATE OF POTASH IN ULCERATED CARCINOMA.—The external use of chlorate of potash has been praised by Prof. Neumann in cases of dental caries. This physician recommends to alleviate the pains produced by caries the placing of chlorate of potash in the dental cavity. Many patients of Königsberg have had the opportunity of experimenting on the anodyne properties of chlorate of potash. Dr. Burow (BERLIN K. WOCH.) writes that the local application of chlorate of potash is of great service in cancerous ulcers. It is applied either in powder or in the form of the small crystals seen in pharmacy. These crystals act more energetically, but are more painful, so that it is better to use the powder first of all.—*The Doctor.*

VULPIAN ON SECTION OF THE TRIGEMINAL NERVE.—M. Vulpian communicated at the Société de Biologie, June 21 (GAZETTE HEBDOMADAIRE, July 4), the interesting and novel lesions which he had observed in a rabbit whose trigeminal nerve had been divided. The cornea presented congestive lesions, which produced a singular change; the cornea became the seat of calcareous formation, and calcareous salts were deposited in it.—*Medical Record.*

ODONTOCELE.—The boy, twelve years of age, now before you, has been annoyed for some months with a tumour upon the right side of the roof of his mouth, which, although it gives him but little pain, yet is sensitive to the touch and is gradually increasing in size. I place my finger upon it, and from its firmness immediately suspect its nature. Let us look at his teeth. The arches seem perfect, yet as we count accurately we find that while there are fourteen teeth in the lower jaw, in the upper there are but thirteen. The missing one is the second bicuspid upon the right side. He says that he never had any teeth extracted, and the explanation of the tumour is simple. It is an odontocele or compound cyst. To be certain of the diagnosis, however, I make a little incision into it, and distinctly feel the missing tooth. I enlarge the puncture and extract the tooth. The boy will have no further trouble.—*Clinic of Dr. J. E. Garretson, in Med. and Surg. Reporter.*

CHEMICAL NOTES.

SHUTTLEWORTH ON THE RESTORATION OF CHLOROFORM INJURED BY AGE.—Where changes are induced in chloroform by time, light, moisture, or atmospheric pressure, E. B. Shuttleworth is of opinion (CANADIAN PHARM. JOURN, vol. vi. 345), that by far the most injurious products of decomposition are chlorine and hydrochloric acid. These products may often be found in an aqueous layer floating on the top of imperfectly rectified chloroform which has been kept some time. The incomplete removal of sulphuric acid which has been used in rectification, also leads to the same change. For the restoration of chloroform that has thus become spoiled, he recommends that it be shaken with a dilute solution of hyposulphite of soda. It should then be separated from the supernatant liquid and again washed; this time with pure water. After being separated, the chloroform should be passed through filtering paper to rid it from traces of moisture, when it will be found much improved and comparatively sweet.—*Berlin Medical Record.*

Bleaching Wax.—Wax is freed from its impurities and bleached by melting it with hot water or steam in a tinned copper or wooden vessel, letting it settle, running off the clear supernatant oily-looking liquid into an oblong trough with a line of holes in its bottom, so as to distribute it upon horizontal wooden cylinders, made to revolve half immersed in cold water, and then exposing the thin ribbons or films thus obtained to the blanching action of air, light, and moisture. For this purpose the ribbons are laid upon long webs of canvas stretched horizontally between standards, two feet above the surface of a sheltered field, having a free exposure to the sunbeams. Here they are frequently turned over and covered by nets, to prevent their being blown away by winds, and watered from time to time. Whenever the colour of the wax seems stationary, it is collected, re-melted, and thrown again into ribbons upon the wet cylinder, in order to present new surfaces to the blanching operation. If the weather proves favourable, the wax eventually loses its yellow tint. Neither chlorine, nor even the chlorides of lime and alkalies, can be employed with advantage to bleach wax, because they render it brittle and impair its burning qualities.—*Chemist and Druggist.*

DENTAL MECHANICS.

GUTTA-PERCHA.

By E. Hale, Jun.

(Missouri Dental Journal.)

The uncertainty which still hangs over the rubber question, has made it obligatory for the profession to have some substitute that would free them entirely from any liabilities to the Rubber Company. Recognizing this necessity, about one year since I tried to induce Mr. S. S. White and Johnson & Lund to prepare some gutta-percha for vulcanizing. Failing in this, for the purpose of experimenting, I prepared some myself, and after several failures succeeded in making some fair specimens, which I presented to the American Dental Association, through Dr. Judd. Since then I have perfected the process, which I give to the profession.

My method of manipulation corresponds with the specifications of N. B. Slayton's patent (now expired), viz.—After having covered your plaster cast with tinfoil, heat a sheet of gutta-percha, already prepared with sulphur for vulcanizing, in hot water, and make a trial plate. Cool this, remove from cast, and trim; then take your articulation in the usual manner, after which remove all wax from the plate. Then, if the teeth are short, heat some gutta-percha, attach it to the tooth or block, heat the plate, and stick them together. If the teeth have to be longer, heat gutta-percha over spirit lamp, being particular not to burn it; heat plate, and thus build up until sufficiently high. Then attach teeth as above. After they are in their place, build up with gutta-percha, heating it over lamp, packing and smoothing it with a hot iron, being careful not to move the teeth from their position or burn the gutta-percha; being sure to pack thoroughly around the teeth, and underneath the block. After it has been tried in the mouth (where it may be worn for a week, if thought necessary), place on the cast, and with a hot iron bring the edges down to it, to prevent plaster from running under the plate; put it into the flask, both sections being together, fill it with plaster, put on the top, and screw the flask together. It is now ready to vulcanize. (I find the Hays vulcanizer produces the best results.) Put the flask into the vulcanizer (after the plaster has set), cover it with *cold water*, then raise the heat very slow, taking at least fifty minutes to raise it to 320°, and then hold it there only fifteen minutes. Cool off the vulcanizer, remove flask, and be certain that the case is perfectly cold before opening the flask. This will produce uniform results. Not only all trouble of packing (as with rubber) is avoided, but the process being entirely different from the method described in the specifications of the Cummings patent, the idea of infringement is preposterous.

My idea has been to present something to the profession as good as rubber, that would free them from the Cummings patent, and am satisfied that I have succeeded. In the first place, Cummings failed on his first application for a patent because he claimed gutta-percha as a base for artificial teeth, which had been patented long before by N. B. Slayton. He subsequently introduced the word *equivalent* in his claim, which he holds covers gutta-percha when manipulated in accordance with the specifications of his patent. My method, being so entirely different from the specifications of Mr. Cummings's patent, is in no way an infringement.

ARTIFICIAL TEETH.

(CHEMIST AND DRUGGIST.)

THE JOURNAL OF APPLIED SCIENCE gives the history of the first porcelain tooth manufactured in America. It seems that about the year 1833 there was a little store in Second Street, in Philadelphia, which was occupied by a man who dabbled a little in dentistry, and managed to eke out a living by mending watches, selling spectacles, &c. The education of the owner of the little shop was defective, and he wasted his means in investigations in order to discover a material which he might substitute for the fragile bone or costly ivory in the mouths of his customers. After squandering nearly all his superfluous funds, he was one evening closing his store, when a German came in, who was acquainted with the manner of making porcelain, and for twenty-five cents offered to instruct the repairer of dilapidated time-pieces in the art. While our embryo dentist was turning the matter in his mind, the thought flashed across his mind, "Why not make porcelain teeth?" Acting on the impulse, he paid the "quarter," was instructed in the mysteries of the process, and soon after turned out the first specimens of porcelain dentistry in the United States.

We gather from the same source that the revenue tax paid on artificial teeth in the United States exceeds a quarter of a million of dollars yearly. The constituents of artificial teeth are chiefly feldspar, silex, kaolin, and a little flux, which make the body and enamel, the various colours being imparted by metallic oxides. Making the gums of natural colour is a most important part of the process. The colour is imparted by the admixture of the colouring substance in the body of the gum before it is burned. The best qualities of crude feldspar come from the quarries in Delaware co., Pennsyslvania. It is quarried, brought to the factory in barrels, heated in a furnace, and the calcination is completed when it is thrown in water, beneath which it is ground and kept for two or three years, during which time a film rises upon the surface, emiting a perfume not pleasant to delicate noses. It is next dried, and after being mixed with the silex and koalin to about the consistency of putty, is pressed into moulds, and takes the form of the block or single tooth; it is then placed upon clay "slides" and "biscuited," that is, heated to a degree which makes it hard enough for the workman to turn the edges of the tooth or block, and yet not sufficiently hard to become fused or vitrified. After the edges are trimmed off they are dipped in a glass, and replaced upon the slides; are returned to the muffle, where they are again heated to about 4,000° F. When properly vitrified, they are taken out and annealed very slowly. When the teeth have been properly made, and all the essentials of strength and beauty have received due attention, they are as tough as stone, and as translucent as the finest Chinese porcelain, the feldspar of which, tradition says, is often kept in water for hundreds of years.

HARDENING SMALL TOOLS.—According to J. Scheuszleder, watchmakers and engravers harden their tools in sealing-wax. The article is made white hot and thrust into sealing-wax, allowed to remain a moment, then withdrawn and thrust into another place; and this treatment is continued until the steel is cold and will no more enter the wax. The hardness thus attained is extreme, and comparable to that of the diamond; in fact, steel hardened in this way may be used for boring or engraving steel hardened by other processes, the tool being previously moistened with oil of turpentine.—*Chemist and Druggist.*

LIQUID GLUE FROM SACCHARATE OF LIME.—A solution of 1 part of loaf-sugar in 3 parts of water imparts neither gloss nor strength to paper. If to the sugar be added the fourth part of its weight of slaked lime, and it be heated to from 145° to 165° F., and allowed to macerate some days, being frequently shaken, the greater part of the lime will be dissolved. The solution decanted from the lime sediment is then found to have the properties of mucilage, and a coat of it possesses gloss and firmness. If 3 parts of glue broken in small pieces be soaked in 12 to 15 parts of this saccharate of lime, then on warming it the glue dissolves rapidly, and remains liquid when cold without losing its strength, as glue does when treated with acid. Glue of any desirable consistency may be prepared by varying the amount of saccharate of lime added; the thicker glue keeps its muddy colour, the thin becomes clear on standing. Gelatine dissolves in this solution without previous soaking; even old gelatine, which has become insoluble in hot water, is soluble therein. This glue has great adhesiveness, and admits of very many uses; it cannot, of course, be used on colours that are injured by the lime. When warming the glue to dissolve it, a strong smell of glue is given off, but this is destroyed by a few drops of oil of lavender; a small admixture of 2 to 3 per cent. of glycerine is also an advantage. Carbonic acid acts upon the lime when the glue is exposed a long time to the air, producing little white specks — without however, affecting its adhesive and preservative power.—*Iron.*

CEMENT FOR DECAYED TEETH.—The MONITEUR DES PRODUITS CHIMIQUES publishes the following formula, patented by M. O. Barbaut:—

Calcined Magnesia	1 part.
White Oxide of Lime	2 parts.

Add 1 part sulphate of morphia to every 30 parts of the mixture.—*Chemist and Druggist*, July.

RECENT VIEWS ON ANÆSTHETICS:
THEIR MORTALITY, AND MODE OF ADMINISTRATION.

By John Murray, M.D.

(London Medical Record.)

(Continued from p. 82.)

III.—*Jones, Haward, Ashurst, Diday, and others on Ether as an Anæsthetic.*

The reaction in favour of ether which has recently taken place in this country demands a full record of the views regarding the value of this anæsthetic. In presenting these opinions, it should be remembered that the advantages of chloroform have been fully made known, and do not require similar attention here. We must mainly, but not entirely, rely on foreign sources for recorded opinions of ether; for, although it was almost entirely superseded by chloroform shortly after its introduction in Great Britain, ether has still been occasionally employed in special cases and extraordinary circumstances. Dr. Thomas Jones (Brit. Med. Jour., Nov. 30, 1872) has been in the habit of administering it, when required, at St. George's Hospital, since 1861; and Mr. Warrington Haward has, since 1870 (Med.-Chir. Trans., vol. liv.), administered ether largely to children and adults of all ages. The editor of the British Medical Journal (June 17, 1871), referring to the use of sulphuric ether—of whose introduction into British practice "we have been and are the urgent advocates"—alludes to the long experience of Dr. Keith, of Edinburgh, of its use in ovariotomy, as showing it to be more rarely followed by vomiting. "Dr. Keith employs anhydrous ether, and with it produces anæsthesia almost as rapidly as by chloroform." Several other gentlemen have, to some extent, availed themselves of the properties of ether as an anæsthetic for some years; and Dr. Joy Jeffries, of Boston, during his visit to London to attend the meetings of the Ophthalmological Congress in August, administered ether in several of the large hospitals. The persistent efforts of the editor of the British Medical Journal, in advocating increased attention to anæsthesia and the claims of ether, have at length aroused the attention of the profession to the statements made in America and France of this anæsthetic; and at the present moment its claims to general recognition are being practically investigated in London and the provinces. The editor of the British Medical Journal (Nov. 10, 1872) says that, "in the face of the great mortality from chloroform, and of the almost deathless record of ether, it has become our duty to interpose, to call the urgent attention of professional men throughout the country to the claims which ether has upon their confidence, and to urge that the anæsthetic which was thrust out of repute by the ready and convenient fluid introduced by Simpson shall have an extended and a fair trial."

It will be well to record some of the recently published opinions, on which the present advocacy of ether in this country is mainly based.

In America, ether has been for twenty-five years generally, but not exclusively, employed in preference to chloroform. Mr. Ashurst, one of the leading authorities in America, says (" Principles and Practice of Surgery," 1871), " I prefer ether in a very large majority of cases; it is sufficiently convenient for almost every case that the surgeon is called upon to treat." At the Massachusetts Hospital a resolution was passed (" Neligan's Medicines," by Macnamara) to the effect that the use of ether should be an absolute law of the institution. The Société de Médecine of Lyons have pronounced three times in favour of ether in preference to chloroform. M. Diday (GAZETTE HEBDOMADAIRE, Nov. 29, 1872) says that chloroform has for a long time been abandoned in Lyons for ether; and that the latter has been found to answer very well, while the patients prefer it. He invites the surgeons of Great Britain to listen to the appeal made to them, and to furnish to the already convincing Lyonese statistics counterproofs which would give them their full value. Dr. J. H. Packard, of Boston, says (BOSTON MED. JOUR., April 12, 1873), that until 1864 his custom was to employ ether or chloroform indifferently. Now he believes ether to be not only perfectly safe, but wholly satisfactory as an anæsthetic. " My firm conviction is, that if the profession in England give ether a fair trial as an anæsthetic, they will agree with the majority of physicians in this country, that it is as economical and efficient as its more dangerous rival. We have no right to imperil our patients' lives by the use of an agent which has slain over a thousand persons, if other and safer means are available." The editor of the AMERICAN QUARTERLY JOURNAL OF MEDICAL SCIENCES says that it is surprising that so many surgeons in England should have obstinately persisted in preferring the use of chloroform, notwithstanding the numerous deaths which have followed its use, and the strong array of evidence which has been adduced of the superior safety of ether. Dr. Joy Jeffries, of Boston, in a paper which he contributed to the BOSTON MEDICAL AND SURGICAL JOURNAL of Oct. 3, 1872, relates his experience of ether inhalation as demonstrated by him in London during the meeting of the Ophthalmological Congress, and says that he "foresaw the day when our English brethren would awaken to the danger of chloroform and safety of ether." The editor of the BOSTON MEDICAL JOURNAL, Oct. 3, 1872, commenting on Dr. Jeffries's paper, maintains that in the legitimate use of ether by inhalation no *bonâ fide* case of death is on record or ever has taken place, and that it is absolutely safe. He asserts that the complaints against ether made by English operators, that it produces insufficient relaxation of the muscular system and but partial insensibility, can only be explained by want of knowledge.

Dr. Thomas Jones (BRIT. MED. JOURN., Nov. 23, 1872), after very long experience in ether and chloroform inhalation, thoroughly believes in the superior claims of ether as an anæsthetic, and is quite sure that, if fairly tried, ether will soon replace chloroform in this country as the anæsthetic in general use. Mr. Thomas Green, of Bristol (*Ibid.*, Dec. 7, 1872), feels so convinced as to the superiority of ether, that nothing shall ever again induce him to give chloroform. Dr. Wm. Alexander (*Ibid.*, Dec. 14) thinks that by the late ventilation of the subject ether has been restored to its pristine position. Mr. Frank Underhill (*Ibid.*, Nov. 9, 1872) is persuaded that the advantages which our American brethren assert ether to possess are fully proved by facts; and he believes the time to be close at hand when chloroform, except on special occasions, will be considered a thing of the past, and that the advantages of ether will be every day more conclusively demonstrated. Dr. J. Morgan, of Dublin (*Ibid.*, Oct. 12, 1872), has used it at all ages from three to seventy-one years, from amputation to the most delicate operations on the eye; and ether has proved itself both most convenient and efficient, while it has been proved to be the safest of all anæsthetic agents. The arguments which have been urged against its use have been those only of its being inconvenient, and these have arisen from want of perfect means of application.

IV.—*Erichsen, Haward, Clover, and others, on the Comparative Safety of Ether and Chloroform.*

THE popularity of ether in America and France appears to be due to its alleged safety. Mr. Erichsen ("Science and Art of Surgery," 1872) says that "the fatal consequences which have attended the employment of chloroform have caused the American surgeons almost entirely to trust to ether in preference. Ether is certainly a safer agent than chloroform, but few deaths having resulted from its administration; and the only argument in favour of the use of chloroform rather than ether is, that chloroform is the most *convenient* agent, its effects being produced more quickly, and no disagreeable smell being left, as is the case with ether." Mr. Haward thinks (MEDICO-CHIRUR. TRANS., vol. liv.) that its general adoption was in great part due to its having as an advocate the indomitable energy of Sir James Simpson; moreover, when chloroform was introduced, the whole subject of anæsthetic inhalation was beginning to be better understood, and its use was therefore commenced under more favourable auspices than ether. He agrees with the view of the Chloroform Committee of the Royal Medical and Chirurgical Society, that ether vapour may be regarded in a certain degree as a stimulant to the force of the heart's action, and that the pressure in the vessels is maintained until there has been a manifest failure of the breathing; that the simple failure of respiration, whilst the circulation remains good, almost always betokens a recoverable condition, but that the failure of the circulation to any considerable extent always involves extreme peril.

Mr. Haward (*Ibid.*) says that "ether has the advantage of being antagonistic to the effect of the shock of an operation." Ether does not produce persistent vomiting. Insensibility can be produced almost as rapidly as by chloroform. Mr. Morgan also considers that there is not much if any difference in time, when the aggregate of cases is taken. Mr. Clover (BRIT. MED. JOURN., March 15, 1873) says that he believes chloroform to be safe if due precautions be taken, and that ether is unsafe without them; but, inasmuch as ether destroys animal life less quickly, it does not need so much care in using it. Mr. John Couper (*Ibid.*, Nov. 30, 1872), after considerable experience, believes that ether is less dangerous to life than chloroform, on account of its inaptitude to produce cardiac syncope; its administration is rarely if ever followed by obstinate and dangerous nausea; it narcotizes as quickly and as certainly as chloroform and with as complete muscular quiescence; and recovery from it is generally quiet and satisfactory. Dr. Joy Jeffries, of Boston ("Report of Ophthalmological Congress," LANCET, Aug. 17, 1872), uses and advocates ether, because it is as effectual as chloroform and not dangerous to life. "It is difficult to kill any one with ether, and death never occurs accidentally while it is being inhaled." Ether anæsthesia at the worst is, he says, but a profound intoxication. Mr. Butlin (BRIT. MED. JOURN., Oct.

26, 1872) says that the inconveniences of ether are not nearly so great as is imagined. The time required is little, if at all, longer than for chloroform anæsthesia. The long-continued sickness is almost unknown after ether.

Mr. G. Everitt Norton says ("Hospital Report on Ether as an Anæsthetic," *Ibid.*, Jan. 11 and 18) that at the Middlesex Hospital ether has been generally administered for the past three months with satisfactory results. Mr. Lewis Mackenzie says that, at the London Hospital, the four surgeons almost universally use ether; but that Mr. Hutchinson makes the exception in the case of old people, for whom he prefers chloroform. Mr. Walter Rigden says that, at University Hospital, he has found ether answer very well. Mr. Cooper Forster, at Guy's Hospital, has not had chloroform given to any one of his patients since Nov. 6.

Dr. Frederick Page says (*Ibid.*, March 1, 1873) that sufficient has been seen of the action of ether as an anæsthetic, at the Newcastle Infirmary, to recommend its more extensive employment, particularly in those cases where chloroform would be considered dangerous, owing to cardiac disease or depression. Dr. Rawdon (*Ibid.*, March 1, 1873) expresses the opinion that, while the anæsthetic effect of ether is as complete as that produced by chloroform, it possesses the advantage of causing less subsequent depression, and is much less liable to give rise to troublesome vomiting. Mr. C. S. Tomes, after recording his experiences of ether inhalation, as seen by him in America (*Ibid.*, March 15, 1873), says, "I do not think that any one could long visit the American hospitals, without becoming imbued with that confidence in its safety which is universal amongst the profession here."

There are not a few opinions expressed, however, against the superiority of ether over chloroform or bichloride of methylene as an anæsthetic, or which at least qualify the statements which are made by the advocates of ether. It is pointed out that ether is not altogether safe; that it is slower in its action; that it produces less complete muscular relaxation, more violent struggling, an equally frequent although, perhaps, less prolonged sickness; that it is much more disagreeable to take than chloroform; that the breath and taste are affected sometimes for days after the inhalation; that in ophthalmic and tracheal (Packard) operations it is unsuitable; and that, owing to its inflammability, it is often most dangerous when artificial light or the actual cautery is employed. It is also asserted that it is more disagreeable to the administrator and to every one present during the operation. Dr. F. H. Hamilton, of Bellevue Hospital, New York, in his treatise on Military Surgery, expresses his opinion of ether as a "comparatively, though not absolutely, innocuous agent." The London Chloroform Committee, in their Report, observe that "it is desirable to obtain an agent which shall produce the required insensibility, and yet is not so dangerous in its operation as chloroform." Ether, to a certain extent, fulfils these conditions: "it is less dangerous than chloroform, but its odour is disagreeable; it is slow in operation, and it gives rise to greater excitement than chloroform." The house-surgeon at the Royal London Ophthalmic Hospital (*Ibid.*, Jan. 18) places ether below both chloroform and bichloride of methylene for convenience, and does not believe that ether will become a general favourite in ophthalmic hospitals; and he is not singular in this view regarding the value of ether in ophthalmic operations. Dr. Jacob (*Ibid.*, Jan. 23, 1873) asserts, however, that the unpleasant symptoms spoken of at the Ophthalmic Hospital are not the fault of the anæsthetic, but of the mode of its administration.

Mr. Jonathan Hutchinson, in an able article (*Ibid.*, March 8) on the death in coma of an old man forty hours after ether inhalation, makes the following remarks:—"I may, perhaps, be somewhat hasty in forming a conclusion from a single case, but I may own that in future I shall not feel inclined to give ether to aged people, and I come to this conclusion the more easily because in them chloroform appears to be attended by little or no risk. In reference to the general question as to the choice of anæsthetics, I may say that I am strongly of opinion that we ought, with the exception of a few cases, to allow ether to supersede chloroform. I have now employed ether in so many cases, both at this hospital, at Moorfields, and in private practice, that I am justified in forming an opinion as to its general applicability. It appears to me that you can do anything with it that you can do with chloroform. It is not quite so rapid in its action, and, on the whole, not quite so convenient to use. Patients complain also more of its disagreeable consequences in the way of head-ache, &c., but these are matters really of comparatively little importance in the majority of operation cases. Now and then it happens that a patient after ether struggles and becomes violent in the stage preceding the full return of consciousness, and in fear of this result I have never yet given it for extraction of cataract; nor do I ever intend to do so, for, as our patients in these operations are always elderly, they are those who bear chloroform well and ether ill. I do not think that at Moorfields we have ever lost by chloroform a patient in whom it was given for the extraction of cataract. Those who have died, and there have been several (none under my own care), have almost always been young patients, and generally, I think, for strabismus operations. Then, again, for young infants, in whom chloroform seems to be exceptionally safe, I think I shall still continue to prefer it. For such operations as hare-lip, for instance, chloroform is more convenient."

The respective merits of ether and chloroform formed the subject of a very animated debate at the meeting of the Surgical Society of Ireland, on December 13, when the balance of opinion tended perhaps rather in favour of ether (MED. TIMES AND GAZ., Dec. 27, 1872). Ultimately a provisional committee was appointed for the purpose of organizing a representative hospital committee, to collect statistics and to lay a Report on the subject before the Society within a year. The results obtained by this committee will be of much value.

JOHN MURRAY, M.D.

(To be continued.)

HOSPITAL REPORTS.

CHARING CROSS HOSPITAL.

Myeloid Sarcoma of the Upper Jaw removed with nearly all the Alveolus of the Left Side, without opening the Cavity of the Nose into that of the Mouth.

(THE LANCET.)

(Under the care of Mr. RICHARD BARWELL.)

THE following case is one of pathological interest, but the nature of the operation and its remarkable advantages and success are what will doubtless engage more particularly the attention of the practitioner. We therefore give the details of the operation in full.

William C——, aged sixteen, was sent by Dr. Green, of Kendall, to the Charing Cross Hospital, on February 19th, 1873. About three years ago the first molar tooth of the left upper jaw became painful, and was removed. This was followed by rather smart bleeding. Soon after pain returned, and with it a swelling, thought to be a gumboil. It remained of the same size, or nearly so, till Christmas last, when it began to grow much more rapidly. One or two smart attacks of bleeding have occurred. There is no history of malignant disease in the family.

The tumour, springing from the otherwise empty socket of the first molar tooth as by a pedicle, invaded the left side of the hard palate and the alveolar arch from behind the canine tooth backwards. It was about the size of a florin. Its inner edge was a segment of a large circle, and was distant about a quarter of an inch from the middle line, but a certain distance of this edge overlapped only, and was not, like the rest, growing from the mucous membrane that it covered. The outer edge corresponded to the arch of the teeth, having, however, displaced the last two molars very much, the bicuspid and canine a little outwards. This tumour, of a darker colour than the sound palate, was elastic, rather hard, uneven on its elevated surface, and pulsated, sometimes a little more than at others. During the eleven days preceding operation the tumour manifestly increased, pressing the teeth further out.

March 1st.—Mr. Barwell, having studied the connexions of the tumour and the relative position of the outer wall of the nostril and the inner margin of the growth, conceived that it would be possible to remove the whole mass without incising the face or without laying the cavity of the nose and mouth into one, an operation of which he said he could find no account in any surgical work or journal. The first bicuspid tooth was drawn, and with the rectangular staphyloraphy knife a cut was made from the posterior palatine canal outward behind the last molar tooth. From the outer end of this line the scalpel was carried through the mucous membrane on the outer aspect of the alveolar arch where the cheek and gum join. From the inner end of the first cut an incision was brought forward in a slightly curved manner, so as to include the inner margin of the tumour, and, being brought through the space left by the extraction of the bicuspid and prolonged upwards from that point, met the second cut in front of the gums at an angle. The alveolus was sawn through to that angle, and here the front wall of the antrum was perforated with a pointed gouge. Bone forceps, passed into this opening, were used to cut through the outer wall of that cavity from before backward to the tuberosity, and then, by following the incision in the hard palate, to cut through that process to the posterior palatine foramen. The bone thus separated was depressed, the finger passed above it, and the part separated by slight traction from its loose connexion with the palate was easily taken with finger and thumb out of the patient's mouth. The case did remarkably well. On the 5th the patient was allowed to get up, and on the 8th to go out for a walk. On the 16th March he left the hospital, the wound all but healed, and with no deformity of the face. He stayed with friends in town another three weeks, and at that time (early in April) no sign of return had shown itself.

DENTAL HOSPITAL OF LONDON.

Monthly Report of Cases Treated from July 1st to July 31st, 1873.

Extractions :—Children under 14, 418; Adults, 639	1,057
Under Nitrous-Oxide	183
Gold Stoppings	66
White Foil ditto	43
Plastic ditto	147
Irregularities of the Teeth treated surgically and mechanically	36
Miscellaneous Cases	262
Advice Cases	46
Total	1,840

CLAUDE ROGERS, *House-Surgeon.*

DENTAL HOSPITAL OF LONDON, LEICESTER SQUARE.

To the Editor of the MONTHLY REVIEW OF DENTAL SURGERY.

DEAR SIR,—Will you allow me, through the medium of your Journal, to make known the result, up to the present time, of our appeal to the profession on behalf of the Dental Hospital Building Fund.—I am, faithfully yours,

EDWIN SERCOMBE,
Hon. Treasurer.

41, Brook Street, Grosvenor Square,
London, W.; August 10.

	£.	s.	d.
Saunders, Edwin, Esq., George Street, Hanover Square	500	0	0
Saunders, Mrs. E. ditto	100	0	0
Ash & Sons, Messrs., Broad Street, Golden Square	150	0	0
Rogers, Mr. Arnold, Hanover Square	105	0	0
Rogers, T. A., H. T., and J., Esqs., ditto	105	0	0
Tomes, John, Esq., F.R.S., Cavendish Square	100	0	0
Clover, J. T., Esq., Cavendish Place	100	0	0
Belisario, Dr., Sydney, Australia	100	0	0
Sercombe, Edwin, Esq., Brook Street	100	0	0
Parkinson, James, Esq., Sackville Street, W. (in five annual payments of 10*l.*)	50	0	0
Mummery, J. R., Esq., Cavendish Place	50	0	0
M. P. (per J. R. Mummery, Esq.)	50	0	0
Woodhouse, A. J., Esq., Hanover Square, W.	50	0	0
Forsyth, W. F., Esq., George Street	50	0	0
Tomes, Charles, Esq., Cavendish Square	50	0	0
Ibbetson, G. A., Esq., Hanover Square	50	0	0
Harding, T. H., Esq., Park Square East, N.W.	50	0	0
Fox, Charles James, Esq., Mortimer Street, W.	50	0	0
Braine, F. Woodhouse, Esq.	50	0	0
O'Meara, Alfred, Esq., Simla, India (in five annual payments of 5*l.* 5*s.*)	26	5	0
Petty, Frank, Esq., Reading (in five annual payments of 5*l.* 5*s.*)	26	5	0
King, E. H., Esq., Stratford Place	21	0	0
A Friend (per H. Rogers, Esq.)	21	0	0
Medwin, A. G., Esq., Blackheath	21	0	0
McGregor, Sir Charles (per E. Saunders, Esq.)	15	0	0
Carried over	1,990	10	0

	£.	s.	d.
Brought forward	1,990	10	0
Longhurst, T., Esq., Old Burlington Street	10	10	0
Wateson, E. W., Esq. (per T. A. Rogers, Esq.)	10	10	0
Pilcher, T. D., Esq. (ditto)	10	10	0
Doubleday, Dr. (per E. Saunders, Esq.)	10	10	0
Vanderpant, F. T., Esq., Kingston-on-Thames (in five annual payments of 2*l.* 2*s.*)	10	10	0
Williamson, William, Esq., Aberdeen (in five annual payments of 2*l.* 2*s.*)	10	10	0
A Lady (per E. Saunders, Esq.)	10	10	0
Nightingate, C., Esq., Shrewsbury	5	5	0
Blanc, D. A., Esq., London	5	5	0
Fothergill, W., Esq., Darlington	5	5	0
Longhurst, Bell, Esq., Old Burlington Street	5	5	0
Hinds, J., Esq., Coventry	5	5	0
Brown, J. H., Esq., Brighton	5	5	0
Peacock, C. T., Esq., Scarborough (in five annual payments of 1*l.* 1*s.*)	5	5	0
Canton, Alfred, Esq., Great Marlborough Street	5	5	0
Fletcher, Thomas, Esq., Warrington	5	0	0
Willows, Charles, Esq., Bristol	5	0	0
Browne, J. C., Esq., Leeds	5	0	0
Major, M., Esq., Penzance	5	0	0
Gibbons, Clifford S., Esq., Brighton	5	0	0
Poundall, W. L., Esq., Derby	3	3	0
Wood, W. R., Esq., Brighton	2	2	0
Henry, George, Esq., Hastings	2	2	0
Strange, Mrs. (per E. Saunders, Esq.)	2	0	0
Abel, A., Esq., Harrogate	1	1	0
Weiss, F., Esq., Great Russell Street	1	1	0
Mosely, A., Esq., Newcastle-on-Tyne	1	1	0
Beavis, George, Esq., Bideford	0	10	6
Barnby, R., Esq., London	0	10	6
Cooper, Henry, Esq., Devonport	0	5	0
	£2,144	6	0

REVIEWS OF BOOKS.

A System of Dental Surgery. By John Tomes, F.R.S., &c., and Charles Tomes, M.A., &c. (S. & A. Churchill, 1873.)

(Second Noice.)

We now come to a more critical and more purely scientific portion of the Messrs. Tomes's work, the account of the Dental Tissues. Here, as we have already observed, only two of the tissues are considered, namely, enamel and dentine; and why the others are not included we cannot tell.

We approached this chapter with particular interest, as we hoped that many doubts and discrepancies, and some mistakes, which have occurred in the former writings of the elder author, would be fairly met, and errors now candidly acknowledged. But having read this section of the book very carefully, we have concluded it with feelings of surprise and with unaffected regret.

In an educational point of view it is imperfect, though prolix, and is confusing to the last degree: in a scientific aspect it contains palpable mistakes; and in its ethical phase,—in the method in which rivals in scientific literature have been treated;—but we forego to finish this sentence; it would be needless to embody our thoughts in words, for by the time we close the notice of this part of the book, our readers will have a fair opportunity of judging for themselves in this matter. As we remarked before, there is much difficulty in fixing responsibility for statements where two authors in a common work write in the singular number, without defining the elementary portions of the book which belong to each. However, we presume we are not wrong in associating this section with Mr. Tomes, the elder. He has made the subject particularly his own; and a large portion of the subject-matter is a reproduction of his former writings.

At the commencement of this section a convenient method of literary references has been adopted: a list of papers and books is given, to which the author afterwards refers, and they are numbered from 1 to 19. In the text when any paper is alluded to, the number on this list is bracketed, and thus the reference can be made out. But though this list is long and full, it is sadly imperfect in one important particular; and here we make a serious complaint. The first name that should appear is wanting, and that name is HENLE. This distinguished histologist was among the earliest of what may be called the present period, and was most conscientious, throwing aside the trammels, which Schwann and Schleiden had cast upon microscopists; and, examining the tissues of the human body without prejudice or preconceived opinions, he described simply and naturally what he saw. Among other important matters in tooth-anatomy, he first illustrated and propounded the true structure of the dentinal tubes, and he figured and described those organs which Mr. Tomes calls "soft fibrils," many years before the latter observer "discovered" them. But Henle's name is omitted: a matter to which we shall again allude.

We do not propose to criticize at any length the section on Enamel. It is long and tedious, and must be terribly confusing to a student. Casting aside the controversy and the involved arguments, all the really instructive and educational matter might have been amply expressed in half-a-dozen pages, instead of occupying nineteen. There is one point of interest which, if proved, would solve a difficulty in histological homogy. Mr. Tomes considers that Naysmith's membrane is a thin layer of cementum, analogous to that which covers the crowns of the teeth in many herbivorous animals, only that it is very thin, and destitute of lacunæ. At first sight, and on superficial observation, this seems probable enough; but there are difficulties as to the development, and the source from which the structure is produced, which do not appear to have struck the author, and which must be met and explained before the theory can be accepted.

In reading the section on Dentine, we are at once struck by the absence of all that interesting matter and illustration on the general anatomy, form, and arrangement of the dentinal tubes which were so well considered in the Lectures. One page, without a single figure, disposes of it all; and then follows a long and confused discussion as to the nature and contents of the dentinal tubes. This is clearly written by the elder author; and some allowance must be made for him, as he has had a difficult task to perform, which could only have been avoided by a frank confession of previous mistake, and an acknowledgment that he had already been anticipated by the distinguished German microcospist, Henle, to whom we have already referred. But this is evidently a proceeding very repugnant to him; and to avoid anything so disagreeable, he has had to adopt much circumlocution and ingenuity, and to suppress some very important observations recorded in his own previous writings.

The matter may be briefly stated thus:—In 1856 Mr. Tomes read before the Royal Society a paper describing certain cylindrical processes which might be obtained in decalcified, and in short lengths in hard dentine; and he described them as fibres and organs of sensation, occupying the cavity of the dentinal tube. Henle had shown all this fifteen years before—described and figured it; and he stated, what turns out to be true, that these cylinders are really the dentinal tubes themselves, and that in the short lengths, in still-calcified dentine, they are hard, and may be softened by acid. Mr. Tomes's mistake arose from his supposing the broad rings seen in transverse sections of dentine to represent their real walls, whereas, as Henle had pointed out, these appearances are an optical illusion, caused by the irradiation of light by the cut edges of these very cylinders. There can be no doubt whatever as to the bodies which Mr. Tomes described.

His experiment on the teeth of marsupial animals is crucial on the point. In marsupials, the dentine tubes pass into the enamel, and the latter may be removed by dilute hydrochloric acid, while the dentinal tubes are only decalcified; but these, Mr. Tomes tells us, are his "fibrils." Exactly: so they are; because Mr. Tomes's fibrils and decalcified dentinal tubes are one and the same, and are identical with the organs which Henle described and figured in 1841, and which unquestionably are the only walls which the tubes possess.

There is another important point. When Mr. Tomes wrote his paper in 1856, and when he published his manual in 1859, he described these cylinders as so firm and elastic, that they could be stretched between two masses of dentine, the diameter being thus "much diminished, and when broken across, a minute globule of transparent, but dense fluid, may sometimes be seen at the broken end, gathered into a more or less spherical form." (1st edit., p. 286.) The foregoing account refers to Mr. Tomes's opinions up to 1859. Since then the author has become aware that the organs he described are really the decalcified dentinal tubes, or sheaths, as he now calls them, and of this there is a partial and grudging admission at page 265. But he does make a frank admission of the error, and he confuses together the decalcified tubes (or sheaths) and their contents; while he now drops all allusion to the "dense and transparent fluid" seen at the broken end of the cylinder, and occupying, according to his own previous showing, its very axis of the tube. The truth is, that this dense fluid is sufficiently viscid to be susceptible of an elongated extenuation, and, under the action of certain hardening re-agents, to become fibre-like. Neumann appears to have demonstrated this phenomenon. But these are not Mr. Tomes's "fibrils" of 1856 and '59.

We are surprised at the manner in which this critical question is illustrated. Does Mr. Tomes seriously mean that figure 128 in this edition represents anything but the sheaths or decalcified tubes? Can he ask any intelligent and practical microscopist to look at that figure, to compare it with Henle's, then to contrast the two with a veritable specimen of isolated dentine tube-walls, and see a difference? We deny that there is a difference, and we ask Mr. Tomes to take some early opportunity of demonstrating it with the specimen from which this figure was taken.

But the most remarkable part of this matter is, that we are called upon to believe that figues 128 and 129 represent the same histological elements. Let the reader turn to page

265, and then to the following page. The probability is that his first impression, when he looks from one illustration to another, will be, that the printer has made a mistake; but the text shows that it is not so, and we are asked to consider the minute, slender threads in the second figure, copied from Boll, as identical with the coarse cylinders that extend free on the right hand of Mr. Tomes's figure 128. A moment's examination of the two illustrations will show what really is the fact. In Boll's figure, between the minute threads and the unbroken mass of ivory, will be seen short lengths of larger cylinders: these are the decalcified tubes, or sheaths; and if the reader will compare these with Tomes's fibrils in Fig. 128, he will see that they are identical, as to diameter and relation, to the intertubular substance, and that they are indeed the same.

How far better would it have been for Mr. Tomes to have placed this matter before the student and the critic in a candid form, admitting Henle's discovery as anticipating his own; and treating the observations of Neumann and Boll as a new and distinct question, and a further step in advance.

There is one point against which we earnestly protest—the naming the tube-walls as "Neumann's sheaths." Such a nomenclature obscures their real meaning, and tends but too successfully to accomplish our author's intention, the disassociation of Henle's name with that histological discovery.

(To be continued.)

ROYAL COLLEGE OF SURGEONS.

Mr. Hancock has been elected a member of the Board of Examiners in Dental Surgery at the Royal College of Surgeons, in the vacancy occasioned by the death of Mr. Partridge.—*Lancet.*

The Pennsylvania College of Dentistry will not, in future, receive any female students.—*New York Medical Record.*

Science as Known to the Ancients.—In Egypt, mummies have been found with teeth filled with gold, and in Quito a skeleton has been discovered with false teeth secured to the cheek bone by gold wire. In the museum at Naples, among some of the surgical instruments discovered at Pompeii, there is a fac-simile of Sim's speculum. In the ruins of Nineveh, Layard found several magnifying glasses.—*New York Medical Record.*

CORRESPONDENCE.

THE DENTAL HOSPITAL.

To the Editor of the Monthly Review of Dental Surgery.

Sir,—I am sure that with your usual impartiality you will oblige me by giving publicity to the protest of a Governor and well-wisher of the Dental Hospital against that which you have advocated in your May number, namely, the employment at this institution of gold foil in cases in which the patients are willing to bear the cost of the material. I would even go further than this protest, and would declare my strong objection to the use of gold under any circumstances, unless, indeed, at the expense of any student who wished to practice with this costly material.

I base my objection upon several grounds—first, that it is unnecessary, or not absolutely necessary, for the education of students that they should do gold fillings in hospital practice. I have no hesitation in saying, and I am sure every practical man will admit, that if, on the completion of his curriculum, the student is able to use tin foil with thorough skilfulness, he will be also equally competent to manipulate gold, for between the operations of plugging with non-adhesive gold and with tin there is absolutely no difference. In the next place, gold is not indispensable for the proper treatment of the cases. Tin foil, Sullivan's cement, and Fletcher's amalgam, if applied with skill and science, suffice, in combination with the other adjuncts which are now available, to save permanently the vast majority of carious teeth which present themselves. Of course gold is much superior in many respects. But gold is a luxury for the rich, and is not to be dispensed to poor hospital patients, who require use, and not ornament. At the general hospitals, for example, cases which require steel or quinine, or cod liver oil, or other expensive drugs, are supplied with wholesome but the least expensive of the various preparations of such articles; but the physician who is called to a wealthy patient prescribes the most elegant combinations not merely desiring to produce the most beneficial effect, but taking care to minister to the luxury (or comfort) of his patient, to whom expense is no object. Or, again, when a patient is discharged from a hospital after the amputation of a limb, he is very often supplied with an artificial member, and he must be satisfied with a strong and useful instrument. A wealthy man having lost a limb, will provide himself with a substitute in which appearance and other luxuries have been fully considered. I object further to the use of gold at the Dental Hospital, because it tends to increase the abuse of the hospital by those able to pay a private practitioner. Abuse of this kind at the hospital to which I hold the post of dentist is common, and I am quite sure it takes place at the Dental Hospital, as it is admitted it does at every general hospital. Lastly, it must be remembered that injudicious and indiscriminate charity is one of the greatest evils of the present day. It places, so to say, a premium upon improvidence, by showing the lower classes that they may be as well off in the way of medical attendance if they make no attempt to help themselves, as if they endeavour to do so. There is no reason why working-men should not form dental clubs on the same system as medical clubs. Many young practitioners will be found willing to engage to attend to the teeth of a number of working-men's families in return for a payment which would amount to but a small subscription from each member of the club, but to the young practitioner would form a valuable addition to his income, not to speak of the introduction to practice which the connexion would certainly open. It is not to be expected, however, that hospital patients of this class will offer to pay for dental operations so long as they are allowed to obtain skilled professional services and the most expensive and luxurious materials gratuitously at the Dental Hospital.—Your obedient servant,

A GOVERNOR OF THE HOSPITAL.

P.S.—I may add that gold fillings at the Dental Hospital are inserted in by no means a small proportion of cases. This material, according to the Monthly Reports of the Hospital, is employed for more than a third of the fillings. Reckoning the cost of each gold plug at two shillings—a moderate estimate—this represents an expenditure of nearly 200*l.* a year for gold foil alone.

July 4th, 1873.

IN the current number of THE PRACTITIONER (August, 1873), Dr. Ainslie Hollis strongly recommends the use of bromide of sodium, in three-grain doses, as a nervous sedative. It seems especially useful in allaying the excitement due to great mental anxiety as well as in general epileptic affections.

To Correspondents.

ALL Communications intended for the Editor should be addressed to the care of Messrs. SMITH, ELDER & Co., 15 Waterloo Place, Pall Mall.

All inquiries respecting Advertisements and Subscriptions should be sent to GEORGE BUTCHER, 4, Crane Court, Fleet Street, E.C.

THE MONTHLY REVIEW
OF
DENTAL SURGERY.

No. IV. SEPTEMBER, 1873. Vol. II.

THE KING'S COLLEGE (LONDON) NEW DENTAL DEPARTMENT.

No better evidence of the progress of Dental Science in this country could be desired than the recent creation at King's College, London, of a special Dental Department. By this means the Dental Student will be able to carry out the entire curriculum of the Royal College of Surgeons at one institution, instead of being compelled to attend both a Dental and Medical School.

Beyond the economy of time and labour, there is the still greater advantage to be recognised of the intimate connection that will inevitably take place between the dental and purely medical student. Such intimacy will be a more powerful agent than any other in inducing those who are entering upon their studies to take the Membership of the College of Surgeons as well as the Diploma of Dental Surgery. King's College has been one of the first, in this country, to follow in the steps of Harvard University, and we believe we are almost entirely indebted to Professor Cartwright for the promotion of such a desirable enterprise.

Seeing the disposition on the part of dental students to take the Membership of the College, it becomes every day more imperative that a preliminary examination in Arts should be made compulsory for the Dental Diploma, so that a student, after acquiring the L.D.S., may meet with no unnecessary difficulty in continuing his studies for the M.R.C.S. There are two means by which this regulation may be enforced: one is for the Royal College of Surgeons to make it compulsory, and the other is for the authorities at the Dental Hospital and King's College to decline to receive any students who cannot produce a Certificate in Arts from one of the bodies recognised by the "powers that be" in Lincoln's Inn Fields.

The students themselves would, we believe, be glad if this higher standard of education were made essential, and noting the advance that Dental Surgery is making as a specialty of Medicine, the present time seems a suitable one for the change.

DEATHS FROM CHLOROFORM.

We have again the painful duty of recording two deaths arising from the administration of Chloroform, one occurring at Brighton after a dental operation, and one in the United States after a small surgical operation. Comment upon them is unnecessary, they tell their own tale; every care and precaution was exercised, and yet the patients died.

Neither operation was of a sufficiently serious nature to endanger life, and we can only regret that the spirit of the present day induces so many to run the risk of taking a dangerous anæsthetic agent rather than endure a little pain.

AMERICAN DENTAL SCHOOLS.

The *Missouri Dental Journal* (July number) has the following comments upon Mr. Turner's article in reference to the Dental Schools of the United States. Mr. Turner's reply will be found at another page of our present issue.

"An article in the *Monthly Review of Dental Surgery*, by J. Smith Turner, of London—whose letter was published in the June number—upon American Dental Schools, is rather lively. Mr. Turner, to use a slang phrase, 'goes through' the dental schools with which he happened to come in contact on his visit to this country, as if he had full confidence in his own ability to sit in judgment upon all of the educational institutions in this country, and render a true verdict as to their merits or demerits. It will be noticed that the author, after having glanced at the Atlantic coast, returned to England under the delusion that he had been through the United States—a mistake which very many have made who have taken hurried trips across the Atlantic, *done up* America in a week or two, and returned to write a book on America and American habits and customs. We are rather inclined to quarrel with the Mr. Turner who has swooped down upon us thus unceremoniously and robbed us of all our glory, and what is worse than all that, has told some unpleasant truths which should never have been permitted to be noised about. Then that sneer at our Man*a*kin anatomy—we do not think he intends to intimate that we get our knowledge of anatomy from the dissection of *birds*—shows that his view was only a superficial one; in fact, that he saw only a small part of even the *superficies* of the American system. If he had only extended his trip into the interior, and intimated his desire to visit a veritable dissecting room, we should have taken great pleasure in showing him around among the dissecting rooms of this metropolis, where he could have feasted his eyes on an almost infinite variety of subjects in every possible stage of cut-up-ativeness, to say nothing of the interesting department where are deposited every morning bushels of eyes freshly gouged out, with cords of noses, ears and fingers, which have been 'chawed off' in little *scrimmages* during the night, and which are carefully gathered up in the morning by the police and conveyed to these *haunts* of learning, thus giving students a delightful opportunity for studying anatomy upon the raw material instead of being obliged to resort to the *manakin* for that purpose. We regret exceedingly that the author of this article had not looked deeper into the American educational system before he had written upon it, as we feel that great injustice has been done the profession; and the schools will undoubtedly suffer in consequence of this unfortunate *exposé* of their peculiarly interesting peculiarities."

THE new Dental Hospital will, we understand, be ready for occupation in December. The fund for the repairs and alterations is increasing in a very satisfactory manner.

DR. MOFFATT, of Boston, on the occasion of his recent visit to this city, made a very valuable suggestion with regard to the best means of demonstrating dental operations to a large class. Dr. Moffatt proposes a range of steps round the operating chair with iron rails in front of each step, so that students might stand one tier a little above the other, thus enabling all to see, and at the same time preventing the crowding round the chair which is so inconvenient to the operator, and by no means comfortable for the members of the class. This is a simple plan that it would be well to carry out at the new Dental Hospital.

ODONTOMES.

(Traite des Tumeurs. Par Paul Broca.)

Odontomes Generally.

III.—*Anatomy and Physiology of Dental Bulbs.*

(*Continued from page* 109.)

The enamel, which is much harder than the dentine, appears to be formed (under low magnifiers) of parallel fibrils almost perpendicular to the surface of the subjacent dentine; but with higher magnifiers it is seen that these fibrils are prismatic bodies of 0^{mm}, 003 to 0^{mm}, 005 in size. These are the enamel prisms (*see* Fig. 5). On teeth in the course of formation these prisms can be easily detached (Fig. 6). When the layer of enamel is quite formed they are so firmly adherent to each other that no mechanical means can separate them, but they may be separated by macerating the enamel in hydrochloric acid very much diluted with water. The enamel prisms are never absolutely rectilinear, but their inflexions are slight, except at the level of the triturating surface of the tooth, when sometimes they describe sufficiently abrupt turnings. This latter form may be also observed in the enamel of certain odontomes. The enamel and the dentine increase in thickness in consequence of the lengthening of the elements which compose them. This lengthening is not the result of the expansion of the elements already formed; the enamel prisms are lengthened at their peripheral extremity; the ivory canaliculi, on the contrary, are lengthened at their central extremity.

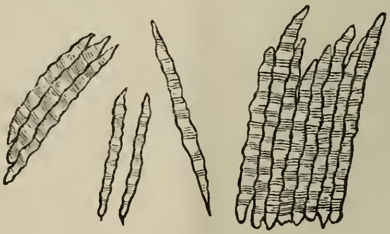

Fig. 10.

Prisms of enamel, obtained by scraping the ivory surface of the molars of a calf, aged two months. 300 diameters.

The mechanism of the formation of the ivory tubes and enamel prisms, and the histological relations which exist between these elements and the odontogenic layers of the bulb, have given place to discussions which are too long to reproduce here; but it is perfectly shown that the formation of the dentinal tubes is in direct dependence on the row of dentinal cells, and that the enamel prisms are subordinate to the previous existence of the row of enamel cells.

Whilst the above-mentioned phenomena are taking place in the cortical layer of the bulb, the pulp becomes the seat of small globular deposits, rounded or elliptical, for whose volume, number, and distribution there is no rule. The smallest are about 0^{mm}, 01 in size; the largest go to 0^{mm}, 05, or even larger. In a pathological condition their volume may be still more considerable. These bodies, already described by Purkinge and Naschkow, in the hare, the pig, and the stag—later, by Henle, in man—and above all, well described by MM. Robin and Magitot, who studied their chemical composition,* have not received any particular name. I propose to give them the name of Dentinal Granulations. The important part that they play in the history of certain odontomes obliges me to give some details upon the process so little known, viz., dental evolution.

The dentinal grains can be formed in the pulp towards the end of the odontoplastic period, and consequently precede the appearance of the dentinal cap; but they are more numerous. Their presence in all cases indicates that dentification is near, and it can be said that their formation is almost contemporary with that of the ivory. The epoch in which there are most is the coronary period; when the crown is finished they become much less numerous, but they do not disappear, and they may be found in the external layers of the pulp during the whole lifetime.

The dentinal granulations have a globular or oval form; they are sometimes lightly depressed on one of their sides, but they always preserve a gently rounded contour (*see* Fig. 7). As they are besides very refractive, they sometimes appear to have at the first glance a certain resemblance to drops of oil. But they are quite insoluble in ether, alcohol, or sulphuret of carbon, whilst they are strongly acted on by hydrochloric acid, which dissolves them completely and renders them colourless and granular. After studying their chemical and physical nature, MM. Robin and Magitot have arrived at the conclusion that the dentinal granulations are composed of phosphate of lime combined with azotised matter, which resists complete dissolution in hydrochloric acid. This development of calcareous masses, they add, appears due to an exaggeration of the nutritive action of which the pulp is the seat during dentification, and to a considerable afflux of calcareous material, of which a portion, going beyond the requirements of the dentinal formation, is deposited in the thickness of the bulb in the form of amorphous masses. This is sufficient to legitimise the term dentinal granulations; but my researches in comparative anatomy and pathological anatomy enable me to give positive corroboration to the opinions of MM. Robin and Magitot. In certain animals, such as the deer, the dentinal granulations form part of the regular dentification, and take an important part in the definitive constitution of an essential dental substance, semi-transparent and glassy, which is developed in abundance in the dental cavity, and which forms the third envelopment of the whole volume of the tooth. This substance, discovered some time ago by M. Emanuel Rousseau, and designated by him as the fourth dental substance, has hitherto been neglected by the anatomists. I studied under the microscope a tooth that M. E. Rousseau entrusted to me, and I proved that it is principally formed of dentinal grains soldered between by a sort of amorphous cement, and constituting rounded masses, which surround and separate the flexible ivory tracks. The tubes of dentine, forming a kind of skein, are wrapped round the mass of dentinal granulations, but the substance in the middle of which these tubes run is in absolute continuity with the medium, which cements the grains so well that sometimes one or more tubes may be perceived whose end is lost in this structure. I have had occasion to confirm an exactly similar disposition in a dentified odontome.

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* Henle, "Anatomie Générale," trad. fr., Paris, 1843, in-8°., t. ii., p. 446, en note. Robin et Magitot, "Mem. sur la genèse et le développement des follicules dentaires, dans le Journ. de Physiologie," Avril, 1860, p. 312.

In the greater part of the rest of the mammiferæ, especially in man, the dentinal grains do not form an essential part of the work of normal dentification. Nevertheless, the conditions in the midst of which they are formed does not allow us to attribute them solely, as MM. Robin and Magitot have done, to an exaggeration of the nutritive movement, for their presence is constant during a certain epoch, and it is very difficult to admit that an excess of nutrition can be constant. On the other side, as I have already said, the appearance of the dentinal granulations can precede the first outline of the dentinal cap; it is thus that it is often found in a new-born child, in the pulp of the second lower molar, although the cortical layer of the bulb of this tooth may still be quite soft. It is quite certain that the dentinal granulations become constant and more numerous during the period of dentification; but it is sufficient that they can exist before the dentine itself, for them not to be considered simply as deposits constituted by an excess of inorganic material which can form no place in the zone where the dentine is formed. The dentinal granulations, the dentinal globules, and dentine proper, are only different forms of the same mineral substance which the vessels of the pulp have the property of separating from the blood, and which have in their turn, the property of combining the organic elements with azotised matter. This mineral substance has a particular affinity for the cortical layer of the bulb. Where the organic matter is submitted by the dentinal cells to a previous elaboration, it there impresses upon it the characteristic structure of dentine; but it cannot reach this except by imbibition, because the vessels do not reach the cortical layer, and in infiltrating thus across the pulp they form there and then dentinal deposits, which combine with the azotised amorphous matter, and only take the globular form without being clothed in the special form of the tissue of dentine This is why the size and number of these deposits cannot be submitted to any rule. The property which the pulp possesses of secreting the mineral substance of the dentine is the determining cause of dentification, and the period at which it manifests itself, coincides generally in the regular evolution of the bulb, with that in which the work of elaboration is effected by the row of dentine, to prepare the soil where the dentine is to be formed. But we know that these two phenomena, the elaboration of the organic base of the dentine, and that of the inorganic base, are not necessarily answerable one

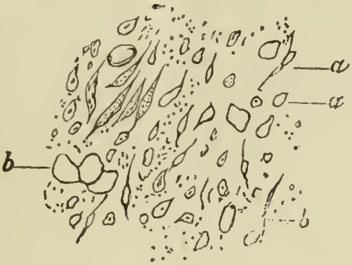

FIG. 11.

Pulp of the first molar of a new-born child. 270 diameters.
a a Fibro-plastic elements of the pulp.
b b Dentinal granulations.

to the other. When the secretion of the mineral substance takes place before the row of dentinal cells have finished their previous function, the formation of the dentinal granulations precedes that of the dentinal cap. The latter does not long delay to appear in its turn; but in a pathological state it may occur that the evolution of the dentinal cells may be delayed or prevented, without the pulp losing the power of producing dentinal matter. In the first place, the numerous dentinal granulations have time to be formed and constitute a mass more or less bulky, before the appearance of the ivory, which then surrounds and imprisons this mass, as it occurs in the central substance of the teeth of the deer. In the second place, it does not form dentine, and there is not, consequently, true dentification, but the pulp is more or less hardened by the deposit of dentinal granulations; it can even put on, up to a certain point, the increased appearance of a formed tooth, as I have said in a case previously cited.

This study of the dentinal granulations allows, I think, the explanation of the formation of the dentinal globules. I have, in fact, reason to believe that the dentinal globules are only dentinal granulations, which, instead of being deposited in the even thickness of the pulp, are deposited in the cortical layer between the dentine already formed and the row of dentinal cells. They constitute there an incomplete layer, in the midst of which the dentinal tubes rapidly lengthen, and are thus closely united with the dentinal substance. I believe I have thus given some details upon the history, hitherto so much neglected, of dentinal granulations, and an account of the important part they play in the evolution of certain odontomes.

We have just seen that the coronary period of the evolution of the dental bulb gives birth to four kinds of solid elements known to be incrusted with mineral matter: the ivory tubes, the dentinal globules, and the dentinal granulations, on the one hand; and on the other, the enamel prisms. There is no question of the cementum, which does not appear till the following period. The odontomes occurring in the human subject during the coronary period cannot, then, enclose the cementum; but it is not so in the herbivora, whose crowns begin at once to be covered with a cemental layer furnished by the special organ of cementum.

A few words now upon the course and progress of dentification. The crown of the uni-cuspid teeth is formed of a single cap of dentine, which gradually appears over the whole surface of the bulb. Upon the multi-cuspid teeth, the caps of dentine, the number of which is equal to those of the cusps, appear at first isolated; afterwards, in enlarging their borders, are brought in contact, and become fused. The bulb continues to increase, but the shell of dentine increases more rapidly than it, surrounds its edges, later its lateral faces, and at last reaches to its base, at the level of the circular furrow which gives insertion to the sides of the follicle. Starting at this moment, the *crown* is completed, and the formation of the root commences. The enamel organ separates itself, and is dissolved, and the enamel ceases to increase. As to the pulp, the inextensible shell which surrounds it does not allow it to become larger; yet this shell is still fully open at the side of the base of the bulb. Thus the pulp is not wholly enclosed; it afterwards continues to grow, but only in the sense of increase of height, and as the result of the formation —the fangs.

The odontomes can form throughout the whole of the coronary period, but the hypertrophy of the bulb can only be produced in the parts which are not altogether surrounded by a dentified layer. There, where the cortical layer is already hardened, the expansion of the pulp is arrested, so that the hypergenesis, instead of becoming general, as it ordinarily is in the preceding period, can here only be partial. Sometimes even it is limited to a very circumscribed part; the surface of the pulp gives rise only to small vegetations, whilst the dentification continues elsewhere to be accomplished in the regular manner. The coronary odontomes can therefore be circumscribed or diffuse, and present therefore very variable forms; but what always characterises them is the existence of a morbid irregular mass, which once dentified, is found in direct continuity with the regular dental tissues, and constitutes a determinate part of a normal tooth.

To Fasten Leather upon Metal.—F. Sieburger recommends the process proposed by the late Professor Fuchs:—One part of the crushed nutgalls is digested six hours with eight parts distilled water, and strained. Glue is macerated in its own weight of water for twenty-four hours, and then dissolved. The warm infusion of galls is spread upon the leather, the glue solution upon the roughened surface of the warm metal, the moist leather is pressed upon it and then dried, when it adheres so that it cannot be removed without tearing.—*Polyt. Notizbl.*

ERUPTION OF THE TEETH.

By Herr Robert Baume,

(Vierteljahrsschrift).

(*Continued from page* 58.)

Hitherto I have only written upon the occurrences and appearances on the floor of the alveolus. We saw through the exuberance of the fibrous structure from the pulp, the gradual resorption of the old bone with the preponderating formation of new bone I now arrive at the description of the occurrences in the upper border of the alveolus. When the tooth should appear, the opening in the bony furrow is somewhat too narrow; the tooth does not find sufficient space for eruption. Therefore, a few millimetres of the bone of the edge of the alveolus must be absorbed. In the floor of the alveolus we have the same conditions, only in that case it is necessary that the space in the alveolus should be narrowed by new bony formation. The granulation (formation) which we observed in the floor of the alveolus occurs also in the upper border; but in this place it is entirely resorbent, for the tooth takes up the space caused by the consumption of the bone, so that it cannot come to granulation.

If we examine the upper border of an alveolus immediately after a small portion of the crown of a tooth has been erupted we shall see that the bone in this place is quite porous, pierced by many openings, and almost as thin as paper. The lamella of the alveolus on the upper edge is even almost transparent. Looked at with the microscope, corresponding to the openings mentioned, generally we shall find a noticeable widening of the Haversian canal. The appearance of resorption at this part of the bone is accordingly plain enough. Through the consumption, then, of a portion of the free edge of the alveolus, the tooth has room enough for eruption.

As I have now given proof that the apposition growth of the fang cannot be the cause of the eruption of the tooth, I come to the consideration of the further formation of the fang portion, and commence from the time when the tooth is on a level with the masticating surface of the rest. I must return to this point, as otherwise, in conformity with the theories of the eruption of the teeth, views may be entertained which, according to my judgment, are not tenable. For the following deductions I must call to remembrance a still earlier declaration concerning the length of the fang after eruption. The fang was only Ca. 0·5 centimetres long at the period when the crown was on a level with the others; it must therefore *grow* Ca. 1·5 centimetres before it can arrive at its normal length.

Wedl says in "Pathology of the Teeth," s. 52, "When the coronal cusps of the first molars have reached the level of those of the deciduous molars, their roots are scarcely more than a few millimetres in length. The subsequent growth of the roots in length and of the jaws in depth, is a comparatively rapid process." The opinion of Tomes is similar. According to these observations of Tomes and Wedl, the growth of the fangs in length depends upon the growth of the jaw in depth. Nevertheless, these views are insufficient for the explanation of many abnormalities. I must remind you of those teeth with mal-formed fangs. Still more striking is the insufficiency of these theories when we observe those teeth which stand perpendicularly to the long axis of the normally-placed tooth—that is to say, have taken up a horizontal position. Here takes place entire formation of the fangs, and evidently entirely without reference to the growth of the jaw. How can the growth of the fangs be explained in these cases? It has been shown from the above facts that the development of the fang can take place independently of the growth of the jaw in depth, and does do so in many cases. It may be said that these cases are merely exceptions to the general rule. But I go further, and say that the growth of the fang bears no reference to the growth of the depth of the jaw, and bring forward as a proof of the soundness of my views a simple example in calculation. When the fang, concerning which I will make a simple calculation, has grown more than 1 centimetre—that is to say, when the erupted crown has already taken its place in the jaw—the jaw must, according to the theory of Tomes and Wedl, have also increased more than 1 centimetre. In order to explain this in the simplest manner possible, I will commence from that period when the first permanent molar has taken its place in the row of teeth. At this time the under jaw at its greatest depth measures about two centimetres.

The lower jaw of grown-up persons averages a measurement of Ca. 3 centimetres; in very powerful structures perhaps 3·5 centimetres. The jaw then increases from the end of the *sixth year only about* 1 *centimetre in depth*. The increase of the jaw in depth is principally finished at the *twentieth year;* from this time the jaw alters very slightly. Accordingly the jaw from the sixth to the twentieth year undergoes an increase in depth of only 1 centimetre in the year, therefore hardly a millimetre. This computation is quite right according to the comparative measurement of the jaws at different ages.

The addition to the lower jaw of 1 centimetre between the sixth and the twentieth year I maintain, and place the other numbers according to the hypothesis of Wedl and Tomes against it. Towards the end of the *sixth* and beginning of the *seventh* year the first permanent molars are erupted; the growth of the fang of this tooth is completed in about *two years.* Now as the increase of the jaw in depth, according to Wedl, corresponds to the growth of the fang, the jaw must have between the *sixth and eighth year* increased 1 centimetre in depth, that is just as much as the fang has grown in length. In the eighth year the incisors appear, whose fang development is finished at the end of the tenth year. In this time, according to Wedl and Tomes, the jaw must have increased at least 1 centimetre in depth. The same numbers and conditions are preserved in the first and second bicuspids and the second and third molars. By each of these species of teeth the jaw must have increased 1 centimetre in depth

The above computation shows the following result:—

In the 6th year, before the eruption of the first molar, the lower jaw has a depth of		2	centim.

It must, according to Wedl, grow

From 6 to 8 years, during the development of the fangs of the first permanent molar,	over	1	,,
From 8 to 10 years, during the development of the fangs of the incisors,	over	1	,,
From 10 to 12 years, during the development of the fangs of the first bicuspids,	over	1	,,
From 12 to 14 years, during the development of the fangs of the second bicuspid,	over	1	,,
Between the time of the development of the fangs of the bicuspids the canine tooth appears, but as it comes in between it cannot be specially reckoned.			
From 14 to 16 years, during the development of the fangs of the second permanent molar,	over	1	,,
From 16 to 20 years, during the development of the fangs of the wisdom tooth,	over	1	,,
	Over	8	centim.

According then to the theory of Wedl, a human lower jaw must attain a depth of over 8 centimetres, whereas in reality it is only 3 centimetres. Further, it must have increased about 6 centimetres between the sixth and twentieth year, while it really has only increased 1 centimetre.

(*To be continued.*)

THE SURGERY OF THE MOUTH.

By Francis Mason, Esq., F.R.C.S., Senior Assistant-Surgeon and Lecturer on Anatomy at St. Thomas's Hospital.

(*Continued from p.* 113.)

Epulis.

The various growths that have already been described as being connected with the gums might with no great impropriety be included in the term epulis, its derivation being from the Greek *ἐπί*, upon, *ουλον*, the gum. Indeed, the old writers classed under this vague term every kind of tumour or growth in this region. There is at the present day some difference of opinion as to the form that epulis assumes, one writer asserting that it is always pedunculated, another that it has a broad base. Sir William Fergusson[*] alludes to the different varieties in shape, and mentions an interesting case of a woman who had an epulis the size of a walnut, having a well-marked pedicle. As she was far gone in pregnancy he was loath to remove it, and in about six weeks she herself rubbed it off with the point of her tongue. The disease known under the name epulis may be thus described:—It consists of a hard substance or excrescence,[†] which commences as a small growth, situated between usually two healthy teeth, generally on the outer or convex surface of the alveolar margin. It grows slowly, often displacing one or more of the contiguous teeth, and has a firm, elastic surface, at first smooth, but soon becoming more or less nodulated. If situated in the upper jaw, it may spread from the gum into the mucous membrane of the palate; and it has been known to penetrate the socket of a molar tooth and invade the cavity of the antrum.[‡]

It may or may not have a pedicle. As to its primary origin, accurate observation has shown that it commences either in the periosteum covering the jaw, being, as Sir J. Paget[§] remarks, an outgrowth upon the jaw, or it may commence in the lining membrane of the alveolus, and thus spread by extending the surrounding bones. It consists of fibrous tissue, having a covering of mucous membrane. The surface seldom bleeds spontaneously; but if the growth assumes a large size, a superficial slough may be observed. Pressure will, in most cases, cause a slight hæmorrhage between the tumour and the alveolar margin.

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[*] "System of Practical Surgery," 5th edition, p. 583.

[†] The Latin synonym is "Odontia excrescens sarcoma epulis."

[‡] Stanley, "Diseases of Bones," p. 260.

[§] "Surgical Pathology," 3rd edition, p. 488.

Mr. Salter* describes epulis as being always of a fibroplastic form, a combination of fibrous tissue and myeloid cells, the proportion of the two constituents varying indefinitely. In general, he continues, the main bulk of the tumour consists of fibrous tissue; but sometimes the myeloid cell element preponderates, and may form the major portion of the growth. There seems to be no doubt that the periosteum and bone are the starting-points of the growth, and that the tumour is continuous with them; hence it is reasonable to infer that the growth is made up to a great extent of fibrous tissue.

Spiculæ of bone, with here and there masses or nodules of bone, are commonly found scattered throughout the tumour. The mucous membrane does not seem to be involved, but is merely tightly stretched over the growth. Epulis varies in consistency, sometimes being soft and easily broken down; hence some writers speak of simple epulis and malignant epulis, besides a third variety, cancerous epulis.† Erichsen says, "The simple epulis is a fibrous tumour; the malignant is usually myeloid, if the term 'malignant' can be applied to that form of tumour; but it is also occasionally cancerous." It is said to be more common in the upper jaw. So small a matter is scarcely worth referring to, but my own impression is that it is much more frequent in the lower jaw and generally in the bicuspid region. Epulis is, as a rule, innocent, and, if completely removed, never returns. There is much room for doubt if the simple form ever runs on to the malignant or cancerous form of the disease. Some of these tumours have a distinctly glandular character.

A brief reference may here be made to a form of disease observed by Mr. Heath,‡ as well as by Mr. Adams,§ of *epithelioma of the jaw.* In Mr. Adams' case, reported on by Dr. Wilks and Mr. Holmes, there were epithelial cells of all forms and sizes, masses of clear polygonal cells, with round or oval nuclei in some parts, and in other portions small round or oval nuclei, best seen after the addition of acetic acid. Good specimens of the laminated capsules met with in epithelioma were not obtained, but some rounded masses resembling these were present. No myeloid cells were seen, even in the portions of the morbid growth that extended into the interior of the horizontal ramus of the jaw.

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* "Trans. Path. Soc.," vol. v., 1854.

† Erichsen, "Surgery," 5th edition, p. 325.

‡ Injuries to Diseases of Jaw, p. 195.

§ Trans. Path. Soc., vol. xii.

The fibrous bands consisted of simple fibrous tissue as well as of nucleated fibres. Epulis seldom occurs in early life. It is supposed by some observers to originate in caries of the teeth, but this is doubtful. It cannot, at least, be solely ascribed to this cause, for it so frequently occurs when the teeth are apparently sound. Further, it is found in cases of edentulous jaw, but, as Mr. Salter remarks, it will generally be found in these instances that a fang of one of the teeth has been left behind, and is associated with the irritation that has caused the morbid growth.

I have seen three such samples.

With regard to the *treatment*, the indications are simple enough. We must remember the pathology of the disease, how the tumour begins, and recollect that it is a local growth. The chief point then consists in removing the *whole* of the diseased structure. If the tumour be of small size, removal with the knife and afterwards scraping and thoroughly denuding the alveolar edge with a gouge or other instrument will suffice to effect a cure. In most simple cases this is all that is required, but the extent of the operation will be in exact ratio to the extent of the disease. If the morbid growth involve the sockets of the teeth, the removal of the latter alone has in some cases brought about a successful issue. But in too many instances it becomes necessary to take away all the sockets of the teeth implicated ; and if this somewhat serious procedure be adopted, care should be taken not to open the sound healthy alveoli, lest the adjacent teeth become loosened. Moreover, it is of the highest importance to the patient that the body of the bone should be retained; for the complete division of say the lower jaw is, owing to the muscles attached thereto, attended with the greatest discomfort, the slightest displacement preventing the proper adaptation of the teeth for the purpose of mastication. In removing the growth a narrow strong saw may be employed at the two limits of the tumour, and with suitable cutting pliers the disease can be readily separated, leaving the base intact, and thus retaining the appearance as well as the usefulness of the jaw. It may be advisable to touch the surface with some caustic ; nitrate of silver or potassa fusa may be used, but by far the most effective is the actual cautery. Should there be troublesome hæmorrhage the part should be thoroughly stuffed with lint, which may be dipped in the tincture of perchloride of iron, and a bandage applied in the manner already recommended for hæmorrhage after extraction of teeth, and described, *The Monthly Review of Dental Surgery,* vol. i., June, 1872, p. 28.

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* Heath, *loc. cit.*, p. 197.

One more point deserves a passing notice with regard to removing epulis or other tumours connected with the upper jaw. These, as those in the lower jaw, should always be attacked from the mouth, and if more room be required to effect their removal, the incisions so strongly insisted on by Sir William Fergusson should be employed, namely, to divide the upper lip exactly in the median line downwards. By reflecting the half of the lip any growth of reasonable size may be reached. Should this incision be found insufficient it may be prolonged on the side of the nose at its junction with the cheek, from the ala towards the inner angle of the orbit. These incisions will be more fully described in succeeding chapters. This point is referred to here with the view of protesting against and deprecating the practice occasionally adopted even at the present day, of carrying the knife from the angle of the mouth upwards and outwards to the malar bone. One moment's consideration of the anatomy of this part will indicate the structures involved in such an incision, — the division of important vessels and nerves, to say nothing of the subsequent deformity, which must for ever after remain.

A NEW ARTICULATING PAPER.

By William Barkley, L.D.S., M.O.S., Etc.

As the most trifling appliance for saving time and labour may not be quite unimportant either to the practitioner or patient, I beg to introduce an articulating paper which, at some trouble, I have induced a manufacturer of the article to put up for the profession. All the paper I had previously tried, not excluding that recommended by Mr. Sercombe, was far too dry, and too slightly saturated with pigment to be practically of much use; and from its thinness it was somewhat difficult to push it far enough back in the mouth to obtain the bite of the last molars, the same fault rendering it nearly useless after being once bitten on, necessitating very frequent changes during the articulation of a set. The paper manufactured for me by Messrs. Field and Tuer, of 50 Leadenhall Street, E.C., will be found stable enough to allow a strip to be readily carried to the back of the mouth, even of an obstinate patient; will freely colour the teeth, on the slightest pressure; and is thick enough to stand frequent biting without crumpling. It is put up in convenient books, interleaved with wax paper, which preserves it moist for a considerable time; the stock, however, should be kept in a stoppered bottle and in a cool place. It may be obtained, I believe, from Messrs. Ash and all the principal depots.

Worcester and Enderby, Great Malvern.

SPONTANEOUS OR CHEMICAL ABRASION.

BY H. JUDD, M.D., D.D.S.

(The Missouri Dental Journal.)

Under this head has been described a wasting away of the cutting edges of teeth, but the descriptions have hitherto been exceedingly unsatisfactory, and show that but little attention has been paid by authors to this condition. Bell describes a case or two, but Harris has given much the best description of it which we have observed in the text-books. He states that it is an affection of very rare occurrence. We by no means agree with him upon this point, for we see cases frequently, and we do not hesitate to state that the treatment of this condition has already assumed a degree of importance which should induce every practitioner to familiarise himself with the affection, and be prepared to remedy it. Harris states that "its progress is exceedingly variable;" that sometimes it destroys a large part of a crown in two or three years, but that in other cases it requires seven or eight years to effect the same results; that as a general thing the tooth is more than ordinarily susceptible to the action of acids, and of heat and cold. He states that it commences on the central incisors, proceeds to the laterals and cuspids, and occasionally, though rarely, to the first bicuspids.

Mr. Bell, in a case reported by him, remarks the smooth polished surface presented upon the cutting edge. Harris thinks the abrasion due to acid mucus secreted by the mucous follicles of the end of the tongue. As to treatment, he remarks that this, like some other affections of the teeth that have been noticed, cannot be cured.

The foregoing contains everything of interest relating to the affection, which we find by consulting Fitch, Jourdan, Tomes, Harris, and Garretson, and our periodical literature has very little upon the subject. In relation to the intimation which Harris makes, that it seldom proceeds as far back as the bicuspids, it is proper to remark that the incisors seem to be the most liable to an attack of this disease, but we have observed as clearly marked cases in the molars as in any other location. The smooth polished surface spoken of by

Mr. Bell we have almost invariably found present. We regret that we have neglected to study many cases which we have observed, but we have noticed five cases recently to which we have given special attention, and which form the principal basis upon which we found the opinions here expressed.

The early history of spontaneous abrasion and mechanical abrasion we apprehend to be so nearly identical, that in the first stages it would be impossible to distinguish between them ; in fact, we are inclined to the opinion that nearly every case of abrasion is, in the commencement, mechanical. We hold to this opinion because we find these two affections generally in teeth of the same character, and usually, though not invariably, when the cutting edges of the upper and lower teeth meet in a natural occlusion of the jaws ; instead of finding it in mouths where the upper teeth close over the lower, as is usually the case. Moreover, we find both of these affections in teeth of a yellowish colour, and which contain a large proportion of earthy constituents ; seldom or never are either of these conditions found in white, soft, sensitive teeth, which we are accustomed to look upon as frail and exceedingly liable to decay. It is true that there seems to be an increased susceptibility to heat, cold, &c., in some cases ; but that extreme sensitiveness, which we find in soft white or bluish white teeth is not found in connection with this condition. The first well-marked symptoms of spontaneous abrasions have been observed upon surfaces of the teeth that have been worn down mechanically so as to expose the dentine, and the first symptom that the spontaneous process had set in, which we have noticed, is the appearance of a dark spot upon the dentine, which has been thus uncovered. The dentine then wastes away more rapidly than the enamel, and we have a concave surface upon the cutting edge of the tooth, which in many cases is strongly marked.

The discoloration is far from being the same in every case, as we occasionally find cases where there is but little change in colour, and we might be induced to suppose the case one of simple mechanical abrasion, were it not for the fact that the loss of tooth substance becomes so great that a physical impossibility exists to such an explanation of the phenomena, inasmuch as the surfaces of the affected tooth can by no possible means be brought in contact with those in the other jaw, and consequently mechanical abrasion cannot take place. The increased liability of being unpleasantly affected by heat, cold, acids, &c., would seem to indicate a hyperæsthesia of the affected part; but this does not prove to be true, as the affected parts are really almost devoid of sensibility, and in most cases can be excavated with impunity. We are of the opinion that in this affection the dental tubules are so infiltrated with earthy matter that the functions of the soft fibres which occupy their lumen in the normal state is destroyed; hence the want of sensitiveness in the affected dentine. The decomposition of the soft contents of the tubules produced by this deposition of earthy matter, interfering as it does with its nutrition, accounts for the change in the colour of the dentine. As to what occasions the deposition of earthy matter in the tubules, we have only hypotheses to answer; and still we naturally attribute it to the irritation produced by the mechanical abrasion, which seems nearly always to usher in the disease. It might be possible for the conditions which we have described, and which seem to be necessary for the development of this affection, to be brought about by other means, but we are inclined to think that cases produced in any other way than the one we have described are rare. The removal of the dentine must probably be attributed to the action of acids and the attrition which takes place during mastication. To the latter we must attribute the polished surface of the concavity. The diagnosis between mechanical and spontaneous abrasion is not difficult. In the former there is a concave surface, which cannot be reached by antagonising teeth, whilst in the latter the abrasion not only can be reached by the antagonising teeth, but when the mouth is closed in the normal position the irregularities and indentations of the surface find their exact counterpart in the opposing denture. In spontaneous abrasion there is little or no sensitiveness. In mechanical abrasion there is not unfrequently extreme sensitiveness. In the one there is usually considerable discoloration. In the other there is little or no discoloration; and in mechanical abrasion there is much greater liability to annoyance from cold, heat, &c., than in the other variety. But it may be asked, why do we denominate this condition otherwise than as a caries? It will be necessary in order to answer this satisfactorily to glance at some of the conditions which are present in caries. Various theories have been put forth in relation to the nature of its causes, and we shall only hint at a few of the most prominent. The chemical theory supposes that the carious process is due to the action of acids upon the teeth. This theory, however, as well as that which preceded it, and which was advocated by Fox, Koecker, Fitch, and others, attributing the primary cause to inflammatory action, fails to explain all the phenomena of the disease. Mr. Tomes's theory of decay is but a modification of the chemical theory, and Wedl must be included in the same category. They all fail to account for the peculiar shapes or forms assumed by the carious cavities. Leber and Rottenstein, however, introduce new elements into their theory of decay, and by this means a more harmonious theory is constructed, one which explains much more clearly than any former one the phenomena actually observed. The cardinal difference between their theory and all of the others mentioned consists in the recognition of the active agency of parasitic forms in its production. The leptothrix buccalis they believe to be a very active and efficient agent in the production of the cavity in many cases, but still it must be borne in mind that acids are essential to this process, and it might be well also to remember that this parasite also flourishes most luxuriously in fluids which present acid reactions.

With these brief remarks upon the nature of caries we are prepared to discuss the difference between spontaneous abrasion and caries. In the former there is a steady disintegration of dentine and enamel, the dentine disappearing more rapidly than the more compact structure of the enamel, and the result is a more or less regularly shaped concavity. As the disintegration takes place slowly, the softened tissues are washed away by the saliva, or worn away by the food coming in contact with them during mastication, and the surface is polished by the continued friction, so as to present the smooth, glassy appearance which is almost invariably found in this condition. In caries when the enamel is destroyed so as to expose the dentine, the leptothrix enter into the dentinal tubules and hasten the carious process in the direction of the tubes longitudinally, *i.e.*, towards the pulp cavity, but in abrasion these tubes are closed up by calcareous matter, which effectually bars their entrance, so that the participation of leptothrix becomes impossible, and hence the marked difference between the characteristics of caries and spontaneous or chemical abrasion. Leber and Rottenstein seem to think that the influence of leptothrix in the production of caries consists in the dilatation of the dentinal tubuli by the parasites, thus allowing acids to enter more freely into the tissues, and thus exercise their solvent effects, but we see no objection to the view that this parasite may prey upon the soft connective tissues of the dentinal structure and destroy it whilst the acids are at work upon the calcareous matter, and in this way do its part in the destructive process. But we are not discussing the carious process farther than is necessary to a full understanding of the diagnosis between caries and chemical abrasion. With this cursory description of the disease, we proceed to a consideration of its treatment.

1st. Can anything be done to prevent it?

2nd. Can anything be done to arrest its progress?

Harris, under the head of "Treatment," says: "This, like some other affections of the teeth, cannot be cured." But with our present knowledge of the disease we can usually, at least, arrest its progress. The immediate cause, as we have seen, is the action of acids principally; and by protecting the cutting edges from these influences, its progress is at once stayed. This is done by completely covering the surfaces with gold. This as a general thing is not a very difficult operation; and operations of this character are very frequently resorted to for this purpose. A small drill is first carried down just at the junction of the enamel with the dentine, into the cutting surface of the tooth about one-third of a line, then place in the engine a fine bur shaped like a truncated cone, the base of the cone at the end of the instrument. Insert this into the cavity formed by the drill, and carry it steadily along the margin of the enamel, where it rests against the outer surface of the dentine, until it describes the whole circuit of the cutting edge of the tooth. A groove will then have been cut around the central portion of the cutting or grinding surface, whilst that portion which marks the deepest portion of the concavity, and which is directly over the pulp, will remain intact. The groove will necessarily be somewhat broader at its deepest part than at the surface, and a filling inserted into the groove will be firmly held in place, and the gold can easily be extended from it over the central portion, and also over the abraded enamel, and the whole should then be carefully built up, as far as may be desired. In cases where these carious cavities are upon the proximal surfaces, these should be connected, as a general thing, with the central filling, and in this way the destructive process is completely arrested. In some cases it may be necessary to insert screws to make the fillings perfectly secure, and in some cases the cutting edge is too thin to leave a central portion, when it is almost always safer to make use of two or three screws to ensure a permanent operation. This is equally efficacious in mechanical abrasion; if resorted to early upon the first appearance of the mechanical abrasion which precedes the spontaneous variety, it will prevent the subsequent cupping in those teeth which have already lost their enamel covering, and also prevent others from being affected in the same way. In order to effect this, however, the gold must be raised over the cutting edge sufficiently to receive the friction of the antagonising teeth upon itself, so that a mechanical wearing away of the surface of other teeth will become impossible. The results of this practice are generally highly satisfactory to both patient and operator, and many dentures are now preserved by this method in a most efficient condition, which would otherwise be inevitably destroyed.

We would impress upon the minds of all, however, the importance of attending to these cases early, as the operation after a considerable number of the teeth are much affected is tedious, expensive, and in no other cases can we benefit our patients more by prompt and early attention than in these cases of abrasion.

NOTES ON MEDICINE AND SURGERY.

REMOVAL OF TONGUE AND LOWER JAW.

(The British Medical Journal.)

We read in the *Canada Lancet* of July that the old man on whom Dr. Hingston of Montreal performed this formidable operation in autumn last, for malignant disease involving both structures, is in perfect health, eats and drinks with ease, and articulates so as to be understood. The operation, so far, is unique.

CRADDOCK ON A CASE OF TRIGEMINAL NEURALGIA, TREATED WITH THE CONSTANT CURRENT.

(The London Medical Record.)

Mr. Craddock, of Shepton Mallet, describes a case of neuralgia of the fifth nerve, which was at first considered to be due to the gouty diathesis, and treated accordingly, with the result of making the patient considerably worse. A variety of other remedies having been altogether ineffectual, with the only exception of aconite liniment, which did a certain amount of good, Mr. Craddock resorted to the use of the constant current, the anode of eight cells of Foveaux's apparatus being placed to the back of the neck, while the cathode was directed successively to the several foci of pain, being kept steadily on each, for a minute or more. The whole application lasted five minutes, and was daily repeated. After the third application, lachrymation, which had been very troublesome, had nearly ceased, and the patient was able to blow his nose freely. Mastication soon became easy, and at the end of a fortnight the patient was quite well.

[This result, although occurring in a patient aged sixty-four, is not surprising, considering that the disease had only lasted five months. Unfortunately, most patients affected with tic resort to a proper galvanic treatment only after many years of suffering, and after having been heroically treated for congestion of the liver and suppressed gout, whereby the system is enfeebled, and precious time lost. Cases of true tic would cease to be looked upon as incurable, if they were treated with the aid of the constant current in the commencement of the affection.—JULIUS ALTHAUS, M.D.—*Rep.*]

ETHER AS AN ANÆSTHETIC.

(THE BRITISH MEDICAL JOURNAL.)

A CORRESPONDENT writes to us as follows :—I have had the opportunity of examining the question of the use of ether in a practical point of view, not only in the London hospitals, Scotland, and the continent, but in the United States, where for upwards of two years I was a resident. Every facility was afforded me for studying the subject of etherisation as practised by the most eminent professors on the other side of the Atlantic ; and I availed myself to the full of the advantages thus offered. I have come to the conclusion, after having seen some hundreds of cases, that there is nothing as yet invented, that for safety, certainty, and freedom from unpleasant results, can compare to ether as an anæsthetic when properly administered ; and I do not hesitate to say, from what I have seen and read, that the method adopted by the American practitioners is neither practically understood nor adopted in this country. Ether when properly administered may be given to the youngest infant and the oldest adult with impunity. My method of administering ether is as follows, and any one who will attend to my directions will be amply repaid in satisfactory results. I use a cone of cardboard, large enough to cover the nose and mouth, having a sponge inside fully charged with ether, the whole being covered with a napkin or towel. I think this preferable to a simple towel, as it prevents waste. I invariably give my patients laudanum, in doses proportionate to the age, half-an-hour before the administration of the ether. For a child four or five years of age I give two minims; for an adult, the dose varies from fifteen to twenty minims. I commence the administration with the patient in a sitting position, by which means the end is more rapidly attained of complete insensibility. The laudanum not only prepares the system for the rapid and complete evolution of the ether, but also checks the tendency to vomiting and spasmodic action. It is of the greatest importance that the stomach should not be overloaded, and therefore I direct a cup of coffee or tea, with an egg beaten in it, to be taken a couple of hours before inhaling the ether, so as to avoid all solid substances. It is no unusual thing for patients to be kept under the influence of ether for several hours, and the quantity inhaled has frequently been as much as a pint. In all severe surgical operations it is of the utmost importance that the patient should be kept completely under the influence of the anæsthetic, otherwise spasmodic action of a very troublesome nature is very likely to arise. In the United States, death resulting from the exhibition of ether is unknown; and, considering the enormous number of cases that annually are treated, it is surprising that the system, which has been found so successful by the American operators, should have found so little support in this country.

TEETHING CHILDREN.

(The British Medical Journal.)

The treatment of diarrhœa in teething children is apt to be looked at from a one-sided point of view—the quickest way to arrest it. We have diarrhœa—1, from dental irritation; 2, from indigestion caused by over and under feeding; 3, from atmospheric changes. Then, too, the diarrhœa may be of a simple, inflammatory, choleraic, or dysenteric character; each variety demanding a different plan of treatment. Astringents, as a rule, are to be condemned. The diarrhœa will continue in spite of them, unless other precautions are taken. If the motions contain mucus and are slimy, and there is a trace of blood and redness about the anus, chalk mixture and kino will be of no service, nor will bismuth, acids, or oxide of zinc. The diet is primarily at fault in these cases, and undigested food has passed into the bowels. Warmth and complete rest, with a dose of castor oil in such cases, is the most appropriate treatment, though the gums may require puncturing, and a grain each of hydrargyrum cum creta and Dover's powder may be necessary. Occasionally a quarter-grain of calomel, with a grain of Dover's powder, will be found of great value.

Among hospital patients a great number of cases of diarrhœa are attributable to oversuckling, and suckling by mothers in delicate health. The return of the catamenia is no hindrance to their nursing, or even menorrhagia in a mild or severe form. Remove all children suffering from diarrhœa from the breast, and let them have cow's milk diluted with lime water, previously warmed and given in a well rinsed bottle, and you will cure the diarrhœa. Many children are reared entirely on Swiss milk, and this will now and then agree far better than cow's milk. Sometimes milk, in any form and however pure, will keep up the diarrhœa, and then cold barley water, or cold water thickened with isinglass will be necessary, or thin water arrowroot, to which a few drops of brandy may be added should the child be exhausted. Sometimes a powder containing two or three grains of rhubarb and carbonate of soda will neutralise the acidity which has resulted from the fermentative products of digestion, and set the little patients right with magical quickness. If the evacuations are free from mucus and blood, and there is no pain, a mild mixture of sulphate of magnesia and tincture of rhubarb may be prescribed in some cases with advantage. A drop of ipecacuanha wine in plain water, or mucilage and water, has been recommended, and it will often succeed. Children are liable to diarrhœa at this season of the year from heat, and the excitement of travelling, and change from healthy country places or the seaside to the contaminated air of London.

W. H. DAY, M.D.

BENNETT ON THE "PITURI": A NEW NARCOTIC.

(THE LONDON MEDICAL RECORD.)

DR. G. BENNETT, writing in the *New South Wales Medical Gazette*, vol. iii., No. 8, May, 1873, some notes on Queensland, says that Mr. Hill gave him a preparation obtained from the leaves of a plant named by the aborigines of the interior "Pituri." It was obtained by Mr. James Gilmour when in search of Dr. Leichhardt, from the natives, in the form of dried leaves, and was used by them as a stimulating narcotic, in a similar manner to the betel of the East, and forming a substitute for tobacco. It was erroneously labelled on the bottle containing the preparation "Pituri Oil," for, on examination, it was found to be spirituous, as if the leaves had fermented in the act of distillation. The botanical character of the plant could not be ascertained, from the leaves received being dried and in so pulverised a state that a perfect leaf could not be found. Mr. Hill stated that he found that the effect of a teaspoonful of this liquid in a glass of water was to produce a burning sensation in the stomach, followed by a vomiting and giddiness.

The following is an abstract of a paper read before the Queensland Philosophical Society March, 1872, on the Pituri, by Dr. Bancroft:—

"On February 9 of this year I obtained from Mr. Gilmour a quantity of dried leaves, and the particulars here narrated, of a plant used by the natives as a stimulating narcotic. These leaves, called 'Pituri,' were obtained in the neighbourhood of the waterhole Kulloo, eight miles beyond Eyre's Creek.

"The use of the pituri is confined to the old men of a tribe called Malutha; all the males of which tribe are circumcised.

"The pituri is carried in neatly-made, oval-pointed bags, specimens of which Mr. Gilmour has brought.

"The old men, before any serious undertaking, chew these dried leaves, appearing to use about a tablespoonful. A few twigs are burnt, and the ashes mixed therewith. After a slight mastication, the bolus is placed behind the ear, to be again chewed from time to time, the whole of which is at last swallowed. The native after this is in a sufficiently courageous state of mind to fight or undertake any serious business.

"One old man, with whom Mr. Gilmour and party fell in, refused to have anything to say or do until he had chewed the pituri; after which he rose and harangued in grand style, ordering the explorers to leave the place. The pituri caused a severe headache in persons who tried it. The dust given off in examining the leaves causes sneezing."

The above is the information supplied by Mr. Gilmour.

Mr. Wills' diary from Coopers' Creek homeward (p. 283) has the following:—

"May 7, 1861. In the evening various members of the tribe came down with lumps of nardoo and handfuls of fish, until we were positively unable to eat any more. They also gave us some stuff they call bedgery or pedgery; it has a highly intoxicating effect when chewed, even in small quantities. It appears to be the dried stems and leaves of some shrub.

"The pituri consists of leaves broken into small particles, and mixed with it acacia leaves, small dried berries containing reniform seeds, and unexpected flower-buds of the shape of a minute caper."

After describing in detail some experiments he made with an infusion of the pituri, Dr. Bancroft thus enumerates its effects :—

"1. Period of preliminary excitement from apparent loss of inhibitory power of the cerebrum, attended with rapid respiration ; in cats and dogs, with vomiting, and profuse secretion of saliva.

"2. Irregular muscular action followed by general convulsion.

"3. Paralysis of respiratory function of medulla.

"4. Death, or

"5. Sighing inspirations at long intervals.

"6. Rapid respiration and returning consciousness.

"7. Normal respiration and general torpidity, not unattended with danger to life."

The poison, given by the mouth, acts with less vigour ; when it is injected into the intestines, the results are more certain. The animal has a longer stage of excitement, the convulsive fit is not so severe, and recovery is more certain. Torpidity remains for some hours.

A quarter of a drop injected under the skin of a rat causes excitement ; the animal starts with slight noises, may fall over a few times from very strong muscular irregularities, remains excitable for some time, then gradually becomes torpid.

In small medical doses, we may expect to find the period of excitement and the torpidity to be the only marked symptoms. In cats and dogs the excitement is not marked, but vomiting of a violent kind occurs.

Some leaves of a tree of the natural order Lauraceæ, and of the genus Tetranthera, used medicinally by the aborigines of New South Wales, were given to Dr. Bennett, which had been brought from the Bogan and Darling, where they are smoked by the aborigines for pains in the head and other ailments. It is named by them Yarran. The leaves have also been smoked by Europeans, and found very beneficial in cases of asthma. The tree grows from twelve to fifteen feet high ; the wood is hard, and used by the aborigines for clubs.

The editor of the *New South Wales Medical Gazette* adds, that at the Cape of Good Hope there is a composite plant, the Parchonanthus camphoratus, Linn., the leaves of which, when dried, are smoked by the Hottentots and bushmen instead of tobacco, exhibiting slight narcotic effects. In the form of infusion, they promote perspiration, and are said to be useful in spasmodic asthma. The Wild Dagga (Leonotus leonurus, R. Brown), which bears very beautiful flowers and belongs to the order Labiatæ, is abundant at the Cape, and is also smoked by the Hottentots instead of tobacco, with similar narcotic symptoms to the preceding.

DR. PORTER SMITH ON CHINESE MATERIA MEDICA.

(Brit. and For. Medico-Chirurgical Review.)

Chloroform is introduced into the list of native remedies, although of course it was unknown until introduced at the mission hospitals. Dr. Smith observes: "That it has a most excellent effect on the Chinese, but should always be given with much caution to confirmed opium smokers, and generally with more care during the very hot weather. The repetition of the drug, towards the close of the operation, when consciousness has been already restored, is a dangerous experiment in the author's experience."

The term *Ma-yoh,* which the natives have given to chloroform, appears to be more generally applied to local anæsthetics than to those which act through and all over the system. The name seems to have been taken from the word applied to the painless eruptions of leprosy, which is called *Ta-ma-fung.* "The flowers of a species of cannabis, *Ho-ma,* and of the datura, *Man-tóu-lo,* were formerly infused in wine, and drunk as a stupefying medicine preparatory to acupuncture, the opening of abscesses, and the use of the actual cautery. A solanaceous plant, called *Yah-puh-lu,* probably identical with the *Atropa mandragora* of botanists, is said to be capable of causing a trance of three days' duration. Hwa-to, a celebrated surgeon of the Han period, the Machaon of Chinese historical romance, used this latter plant. Aconite root, the tubers of *Pinellia tuberifera,* long pepper, the root of *Heterotropa asaroides,* the flowers of hyoscyamus, azalea, andromeda, and rhododendron, the tubers of *Arisæma* and *Arum pentaphyllum,* an unknown gum resin, called *Mwan-hiang,* and the fat extracted from the head of the toad, are substances which are reputed to have anæsthetic properties, generally applied locally. These substances, and other imaginary or superstitious formulæ, are said to be employed by kidnappers of children, who manufacture *Yoh-p-ing,* or 'medical confectionery,' containing these drugs. On this account such drugs, called *Mi-yoh,* are virtually forbidden to be sold or employed. Robbers are known to use a sort of pastille containing the *Mwan-hiang* and other quieting perfumes, by means of which they certainly seem to render the sleep of their victims very profound."—(P. 61.)

Dragon's teeth or *Lung-ch'i* are "fossil teeth of the *Stegodon sinensis* (Owen) that have been found in the marly beds of the country round Shanghai by Lockhart, and of the *Stegodon orientalis* (Owen), by Swinhoe, near Ch'ung-king fu, in Sech'uen. These, with the horns of the *Chalicotherium sinense* (Swinhoe), the teeth of *Hyla sinensis*, from Ch'ung-king fu and from Ching-tu fu, in Sech'uen, and molars of mastodons, elephants, sheep, stags, teeth of the hippotherium, described by Hanbury, after Waterhouse, as coming from Shensi and Shansi, are sold under the name of Lung-ch'i. They are supposed to act on the liver, and to be of great service as cordial or sedative remedies."

DR. JOHN OGLE ON HEREDITARY TRANSMISSION OF STRUCTURAL PECULIARITIES.

(BRIT. AND FOR. MEDICO-CHIRURGICAL REVIEW.)

DR. SHORTHOUSE has kindly given me the following memoranda, which are highly interesting in connection with the subject of breeding and transmission of peculiarities. He says he first received the hint on the subject from Mr. South. He observes that men with cleft palates do not beget children; they copulate in all ways like other men, but do not procreate. It is a fact for which there is no explanation. He remarks: "We are all acquainted with the relationship which the tonsils and glands at the posterior part of the palate have with the organs of generation; also of the fact that the excision of the tonsil causes the absorption of the testes. Perotitis also is very frequently the, cause of the wasting of the left testis. Of this circumstance I have seen at least thirty cases. It is probably because the tonsils and other glands at the posterior part of the mouth are either defective or interfered with. The non-fecundity does not extend to the weaker sex, as women with cleft palate breed as well as their more developed sisters. It is also a fact that cleft palate is about seven times as frequent in females as in men." He goes on to say next, "the young lions (or lion cubs) which are whelped at the London Zoological Society's Garden are all of them born with cleft palate, and ALL OF THEM DIE. I do not mean those which are the issue of *one* particular lion or lioness, but of all the pairs of lions and lionesses at the gardens. It seems a sort of indigenous deformity. But, as a matter of fact, the managers cannot rear any young lions; they all of them die, and all of them have cleft palates.* Now, in travelling manageries, and also at the Dublin Zoological Gardens, the lions and lionesses rear up cubs to maturity, and none, or at any rate, very few, if any, have cleft palates. But, at any rate, they live and are reared, whilst those born at the London Zoological Gardens all die in infancy." Is this difference, I would ask, solely attributable to climate?

CHEMICAL NOTES.

Action of Platinum and Palladium on the Hydrocarbides.—It is known that a spiral platinum wire, previously heated to redness and placed in contact with vapours of alcohol or ether, gives rise to a variety of products, of which the chief are aldehyd and acetic acid. All the mono-atomic alcohols and their ethers act in an analogous manner, producing the aldehyd and the acid corresponding to the alcohol. All the hydrocarbons, the volatile oils, anilin, &c., maintain the incandescence of the platinum spiral. The fixed oils, the sulphuretted oils, such as those of garlic and mustard, seem to form an exception. The author has collected the products of combustion in the case of three substances belonging to three different series—toluen, $C_{14}H_8$, of the series $C_{2n}H_{2-n6}$; formen, C_2H_4, of the series $C_{2n}H_{2n-2}$; and ethylen, C_4H_4, of the series $C_{2n}H_{2n}$. Toluen gives up 2 equivalents of hydrogen to form water with the oxygen, and yields aldehyd and benzoic acid. Formen yields formic acid, and ethylen produces acetic acid. The action of palladium is more powerful than that of platinum. It becomes wrinkled on its surface, and breaks easily after having been in use for some days; moreover, it loses weight very distinctly.—*J. J. Coquillion.*

A NEW THING.

(The Dental Register.)

Dr. J. W. Baxter, of Vevay, Ind., has invented and constructed a machine for cutting Arkansas stone into small wheels, cylinders, and cones—indeed, into any desirable form for dental purposes; and such is its perfection, that the work is done rapidly and very accurately. They are mounted upon mandrels, and are used in the Morrison Lathe, and may be mounted for any other lathe. They are very valuable indeed, and for a variety of purposes, which will readily be suggested to the mind of the skilful operator. Of the uses to which they are so well adapted, we find none more effective than that of cleaning the teeth—removing the deposit which so greatly discolours them, adheres firmly, and is so difficult to remove by the ordinary means. These little Arkansas stone cones are, for the purpose, more efficient than anything we have ever used. They should be in the hands of every dentist. Dr. Baxter will doubtless have them in the market soon. He also makes a diamond point burnisher, from what is known as the Alaska diamond, that is far superior to any steel brusher. No one after having become familiar with the use of these things, would be content to be without them.

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* This statement is, I find, not strictly accurate. My friend, Mr. Sclater, the Secretary of the London Zoological Society, informs me that though in several instances the lions born in the gardens have had cleft palates, it is not always so. He is unable to give any explanation of the fact.

DEATH OF A LADY FROM CHLOROFORM.

(BRIGHTON OBSERVER.)

ON Wednesday evening an inquest was held at the City of Hereford Inn, New Road, on the body of Mrs. Fredrica Peacocke, a Hampshire lady, who on a visit to Brighton died suddenly whilst undergoing a dental operation under circumstances detailed in the following evidence:—

Mary Stewart, of Efford Park, near Lymington, deposed that she was in the service of deceased as a lady's maid, and came to Brighton with her on Saturday for the purpose of having a tooth drawn. Deceased had been suffering from toothache for some time. Was in Mr. Gibbons' room with deceased about half-past seven yesterday, and saw chloroform administered to her by Mr. Baker. Deceased had not complained of illness before she came to Brighton. Had lived with the family for twenty years. Deceased had had teeth taken out under chloroform before; she was not subject to fits.

Mr. S. C. Gibbons deposed: I am a surgeon-dentist, practising at 61 Old Steyne. Mrs. Peacocke wrote to me the letter which I produce. It was delivered in my absence, and answered by my secretary. (Letter read.) I saw her at half-past six on the same day. I had not then seen her letter. She said she wished to have her tooth out, and that her maid was in the habit of giving her chloroform, and wished me to allow her to administer it. This I refused to do, and I told her she must have a medical man. She wished me to procure one, and I called on Mr. Blaker and made an appointment for half-past seven yesterday evening at my house. She came at that time, and Mr. Blaker about the same time. I had done nothing before Mr. Blaker came. Mr. Blaker administered the chloroform. He asked her if she had had chloroform before. She said she was in the habit of taking it, giving it to herself, and that her maid had given it to her. Mr. Blaker made her undo her dress to see that there was nothing tight about her dress. He examined her heart with the stethoscope, all of which she stated she thought unnecessary. Mr. Blaker then commenced giving her chloroform from a sponge. After a few inhalations Mr. Blaker removed the sponge, and she said she was "not off." Just before she made us promise that I would not commence the operation before she was fully under the influence, and that Mr. Blaker would give her sufficient. The sponge was replaced, and she breathed again for about a quarter of a minute. She then raised her right hand to indicate that she was not insensible, and the sponge was again removed for a few seconds, Mr. Blaker observing that he thought she would soon be off, and in about half a minute I commenced extracting the tooth. On grasping the tooth she moved as though she slightly felt the operation, and at the same time closed the jaw very violently. I then, with Mr. Blaker's assistance, depressed the jaw and removed the tooth. About half a minute after the tooth was out I noticed a dusky appearance in her face, and Mr. Blaker, feeling her pulse, remarked to me that it had stopped. We then opened the windows and tore her dress open in front, and endeavoured to restore her by dashing cold water over her chest and making her breathe artificially. This we continued for nearly an hour. I have very often seen chloroform administered.

In answer to a question as to the quantity of chloroform administered, witness said Mr. Blaker administered an unusually small quantity in this case. I should think (he added) it was not a drachm. We afterwards sent for Dr. Moon, and a galvanic battery, and for Mr. Tatham. I was a little anxious about her because she was a stout person; but I should not in any case have had it administered without a medical man being present.

Mr. Nathaniel Paine Blaker deposed: I am a surgeon practising at Brighton. Last evening I received a message to give chloroform to a lady at Mr. Gibbons's at half-past seven. I went there a few minutes later. I saw the deceased; she was stout, but I noticed nothing unhealthy in her appearance. I asked her if she had lately had food, and she said she had little or nothing all day. I asked her if she had had chloroform before. She said yes; she had given it to herself, and her servant had given it to her. She sat in the chair. I requested her to undo her dress and stays, and anything tight, and afterwards passed my hand underneath her stays, and satisfied myself that there was nothing tight. I examined her heart with a stethoscope. The sounds were perfectly healthy, and the beats of fairly good power, between seventy and eighty in a minute. I then gave her chloroform with a sponge, as is usually done at the hospital here. I always commence chloroform very gently, both because it prevents a feeling of suffocation, and because the patients are differently influenced by the drug. I did so in the present instance. I poured a few drops on the apex of a conical sponge, and held it for a few seconds not quite close to the nose and mouth. I then removed it, and allowed her to have one or two inspirations of pure air. She then said she was not off. I replaced the sponge for a few more seconds and again removed it; this time she held up her hand. I then replaced the sponge for a few seconds more, when she struggled a little, not more than usual. I then removed the sponge, and Mr. Gibbons removed the tooth. I assisted him with one hand to depress the jaw, which was tightly closed; my other hand was on her pulse, and just as he finished I felt the pulse stop. I said so to him. The face became dusky, but deep sighing respiration went on at intervals for nearly two minutes. I dashed water on the stomach, and turned her head on one side; the tongue was already well forward. We commenced artificial respiration, first by Dr. Marshall Hall's plan, and then by Dr. Silvester's, and we continued it for nearly an hour.

In reply to further questions the witness said: I have to-day made a *post-mortem* examination, assisted by Dr. Moon, Mr. Tatham, and Mr. Hall, of Lymington. The body was fat, decomposition and discoloration had already commenced We found the lungs healthy. The muscular structure of the heart on the left side was in a state of fatty degeneration. On the right side fat had so much encroached from the external surface upon the muscular structure that in parts scarcely any muscle remained. There was slight degeneration of the coats of the aorta, most marked round the origin of the coronary arteries, those which supply the heart. The liver was large and fatty; the spleen was healthy; the kidneys nearly healthy. I think death was the result of a sudden failure of the heart's action, the organ being in such a diseased state, and I think any sudden muscular exertion might have produced the same result, independently of the chloroform. Fatty degeneration is perfectly impossible to discover during life by any physical signs. I have administered chloroform in nearly a thousand cases. I administered very little in this.

Mr. Samuel Hall deposed: I am a surgeon practising at Lymington, Hants. I was the deceased's usual medical attendant. I have attended her for nine or ten years; her age was forty-two. I have not seen her professionally for nearly twelve months, but have otherwise constantly seen her. Her health was for the most part good. I noticed latterly that she got stouter, which gave me anxiety; at her time of life only passing anxiety. I have never attended her for a serious illness. I did not anticipate disease of the heart. I attributed the feeble heart to her general fatty state. I have several times partially administered chloroform to her; more than was administered on this occasion. I have had no anxiety in any of these cases. I had been told that she was in the habit of taking it herself. It was administered to relieve neuralgia. I have cautioned her against the use of it. It is one or two years since I administered it to her.

Henry Moon deposed: I am M.D., a Fellow of the Royal College of Physicians in London, practising as a physician at Brighton. I was summoned to 61 Old Steyne last evening about ten minutes to eight. I found the deceased lying on her back in a chair in the front room, the top window being opened, her chest and neck uncovered. She was very pale, the limbs flaccid, and Mr. Blaker and Mr. Gibbons were vigorously engaged in raising the arms over the head and depressing them to her side, with a view of producing artificial respiration. On examining her heart I found no movement in it, neither was there pulsation in the arteries of the wrist. I procured a galvanic battery, and, assisted by Mr. Tatham, it was applied freely to the heart, diaphragm, intercostal muscles, and other muscles of respiration for half an hour, and although movements were produced in them, there were no returns of breathing or circulation as signs of life. I believe she died from syncope, that is, paralysis of the heart, taking place soon after the administration of the chloroform, in consequence of the fatty degeneration of that organ; the heart stopped suddenly, whilst breathing was continued some little time afterwards. In cases of death from chloroform by suffocation as a result of paralysis of the nerves supplying the organs of respiration, the heart beats for some minutes after breathing has ceased, and this opinion was confirmed by the *post-mortem* examination at which I was present, and in the description whereof by Mr. Blaker I entirely agree. I believe the chloroform in this instance was administered with great care, and that a very small quantity was used, for at that time Mr. Blaker gave me the bottle produced, which contained the chloroform, and scarcely a drachm had been taken from it. In consequence of the rapid development of fatty degeneration of the heart, that which might have been safe twelve months ago in the administration of chloroform would not be so now.

The Deputy Coroner having summed up, the jury returned a verdict in accordance with the medical testimony, that deceased died from fatty degeneration of the heart, whilst under the influence of chloroform administered in a skilful manner.

(The Lancet.)

An inquest was held at Brighton on the 23rd ult., on the body of a lady who had died the previous day during the extraction of a tooth under chloroform.

The dentist in whose house the unfortunate accident occurred deposed that the deceased lady had written to make an appointment for the extraction of a tooth "under chloroform." The operation was arranged for the 22nd, chloroform being administered by Mr. N. P. Blaker. The operation was performed at half-past seven in the evening, and, in answer to the question put by the chloroformist, the deceased stated that she had eaten little or nothing all day, but immediately before the operation a glass of sherry was administered. From Mr. Blaker's evidence we gather that the deceased was seated in an upright position in a chair, and chloroform was administered by means of a conical sponge. Previous to the operation all her clothes were loosened, and the heart, having been carefully examined by the stethoscope, was pronounced healthy. The deceased requested that nothing might be done "until she was fully under," and once or twice interrupted the administration with a similar caution. There was not much struggling, but the jaw being tightly closed, it was necessary to depress it forcibly before the forceps could be applied. Coincidently with the extraction of the tooth the pulse stopped, and in spite of all the usual measures—artificial respiration, the dashing of cold water, and faradism—which were continued with great assiduity, it was found impossible to restore animation.

The usual medical attendant of the deceased lady attended at the inquest, and stated that she was forty-two years old, that she had required no medical attendance for the last twelve months, and that, although her stoutness gave him some anxiety, he never anticipated any disease of the heart.

He had several times given her chloroform, and each time a larger dose than that which had proved fatal, but had no administered chloroform to her during the past year.

Mr. Blaker further deposed that he had made a *post-mortem* examination, the chief feature of which was the extreme condition of fatty degeneration of the heart. Mr. Blaker informs us that "the muscular structure was of a tawny colour, easily broken down under pressure. Examined under the microscope, a thin layer, about a line in thickness, of comparatively healthy muscular structure, was found immediately beneath the visceral pericardium; the remainder of the muscular structure was in the most advanced state of fatty degeneration."

It seems that we have here a case of death from chloroform which may truly be looked upon as an accident pure and simple. Every precaution had been taken, and no blame can possibly attach to anyone concerned. It is one of those cases where death seems to have followed rigidity of muscle, and it is questionable whether asphyxia may not have helped, as it were, the fatal syncope. The upright position and the lack of food prior to the operation may each, too, have assisted to bring about the untoward result.

(BRITISH MEDICAL JOURNAL.)

WE regret to announce the melancholy death this week of a lady in Brighton from the effects of chloroform. A tooth was being extracted by Mr. Gibbon, dentist; Mr. Blaker, surgeon, of Brighton, being present. Immediately the tooth was extracted the pulse ceased, the face became blanched, and the patient inspired deeply several times. Galvanism and other means were ineffectual in restoring life. The necropsy disclosed fatty degeneration of the heart. The chloroform appears to have been carefully administered, and a verdict in accordance with this was given by the coroner's jury.

(THE BRITISH MEDICAL JOURNAL.)

THE deaths which it has been our painful duty to record during the last quarter have certainly not been less numerous than usual. We referred the week before last to the death from this agent of a lady in Brighton. We now regret to hear from the *Cincinnati Clinic* of the death of a young and apparently healthy German, who presented himself to a medical man in the city to have a machinery wound of the fingers attended to. Chloroform was administered; and before full narcosis was established, the patient was seized with convulsions and died.

HOSPITAL REPORTS.

KING'S COLLEGE HOSPITAL.

Tumour in the Antrum.

(Under the care of Sir William Fergusson.)

Mary Keating, æt. 23, living at King's College Hospital as domestic servant, was admitted into the Fisk Ward on August 9th, 1873, under Sir William Fergusson, for tumour in right antrum.

Three or four months ago she noticed that the tears rolled over her cheek continually, and soon after a swelling appeared on right cheek and also on hard palate, extending to nearly the middle line, in which was a small sinus but not leading to any bone. No bad teeth or severe pain; family history good; right nostril nearly closed up through pressure.

August 10.—After patient had been put under chloroform Sir William Fergusson cut through the upper lip and along right nostril, and dissected up the cheek, and taking away the anterior wall of antrum removed the growth, which was of a fibroid character, and fastened lip by means of hare lip pins, &c.

Sir William Fergusson remarked after the operation that these tumours were really tumours *in* the antrum, and not, as they were usually called, tumours *of* the antrum. He then went on to describe his method of operating, which was done with the view of leaving as little scar as possible.

Patient is getting on exceedingly well, all the incision having healed by the first intention.

DENTAL HOSPITAL OF LONDON.

Monthly Report of Cases Treated from August 1st to August 31st, 1873.

Extractions :—Children under 14, 386 ; Adults, 560	946
Under Nitrous-Oxide	87
Gold Stoppings	47
White Foil ditto	40
Plastic ditto	105
Irregularities of the Teeth treated surgically and mechanically	18
Miscellaneous Cases	186
Advice Cases	48
Total	1,477

Claude Rogers, *House-Surgeon.*

DENTAL HOSPITAL OF LONDON, LEICESTER SQUARE.

SECOND LIST OF SUBSCRIPTIONS.

	£	s.	d.
Amount already acknowledged	2144	6	0
Barrett, J., Esq., Finsbury Square	100	0	0
McCalmont, Robert, Esq., Eaton Square (per E. Saunders, Esq.)	50	0	0
Peek, H. W., Esq., M.P., Wimbledon (per E. Saunders, Esq.)	50	0	0
Normansell and Woolfreys, Messrs., Gloucester Place ...	50	0	0
Fletcher, J. B., Esq., New Burlington Street (in five annual payments)	50	0	0
Coles, Oakley, Esq., Wimpole Street (in five instalments)...	25	0	0
The Clothworkers' Company (per James Parkinson, Esq.)	10	10	0
May, W. H., Esq., Euston Square	10	10	0
Savory, Mr., Brighton (per E. Saunders, Esq.)	5	5	0
Brown, Mr. and Mrs., Tunbridge Wells (per E. Saunders, Esq.)	5	5	0
Lubbock, Lady, Beckenham (per E. Saunders, Esq.) ...	5	5	0
Jordan, H. W., Esq., Princes Street...	5	5	0
Fairbank, J., Esq., George Street (in five annual payments)	5	5	0
Torpey, G., Esq., Euston Road (ditto)	5	5	0
Campbell, W., Esq., Dundee (ditto)	5	5	0
Wormald, D. A., Esq., Bury (ditto)	5	5	0
Rose, J. E., Esq., Liverpool	5	5	0
Moore, R. H., Esq., Dublin	5	0	0
Finney, J. D., Esq., Furnival's Inn (per E. Saunders, Esq.)	2	2	0
Earle, T. H., Esq., Lincoln's Inn (per E. Saunders, Esq.)..	2	2	0
Oliphant, K., Esq., London	1	0	0
Howell, Miss (per E. Saunders, Esq.)	1	1	0
Meade, F. K., Esq., Stanley Crescent (per E. Saunders, Esq.)	1	1	0
Blair, Richard, Esq., Manchester	1	1	0
	£2,435	18	0

Erratum (August Number).

In page 138, line 2 from top, for "Longhurst, T., Esq., Old Burlington Street," read "Longhurst, Sidney, Esq., Old Burlington Street."

LIVERPOOL DENTAL HOSPITAL.

Monthly Report of Cases Treated from

July 1*st to July* 31*st*, 1873.		*August* 1*st to August* 30*th*, 1873.	
Males	238	Males	255
Females . . .	233	Females . . .	218
Total . . .	471	Total . . .	473
Number of operations, &c., 618.		Number of operations, &c., 627.	

W. J. Newman, *Hon. Sec.*

INFORMATION FOR STUDENTS.

The information contained in the following pages is intended for those who propose taking the Diploma in Dental Surgery of the Royal College of Surgeons of England. Those who prefer seeking also the Membership of the College will obtain all the necessary particulars in the Students' Number of the Medical Papers for the 13th inst.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Regulations relating to the Diploma in Dental Surgery.

Education.—Candidates are required to produce the following Certificates:—1. Of being twenty-one years of age.—2. Of having been engaged during four years in the acquirement of professional knowledge—3. Of having attended, at a school or schools recognised by this College, not less than one of each of the following courses of lectures, delivered by lecturers recognised by this College, namely, Anatomy, Physiology, Surgery, Medicine, Chemistry, and Materia Medica.—4. Of having attended a second winter course of lectures on Anatomy; or a course of not less than twenty lectures on the Anatomy of the Head and Neck, delivered by lecturers recognised by this College.—5. Of having performed dissections at a recognised school during not less than nine months.—6. Of having completed a course of Chemical Manipulation, under the superintendence of a teacher or lecturer recognised by this College.—7. Of having attended, at a recognised hospital or hospitals in the United Kingdom, the practice of Surgery and Clinical Lectures on Surgery during two winter sessions.—8. Of having attended, at a recognised school, two courses of lectures upon each of the following subjects, viz.:—Dental Anatomy and Physiology (human and comparative), Dental Surgery, Dental Mechanics, and one course of lectures on Metallurgy, by lecturers recognised by this College.—9. Of having been engaged, during a period of not less than three years, in acquiring a practical familiarity with the details of Mechanical Dentistry, under the instruction of a competent practitioner.—10. Of having attended at a recognised Dental Hospital, or in the Dental department of a recognised general hospital, the practice of Dental Surgery during the period of two years.

N.B.—The students of the London schools are required to register the above certificates at this College; and special returns will be required from the provincial schools.

Examination.—The examination is partly written and partly oral. The written examination comprises General

Anatomy and Physiology, and General Pathology and Surgery, with especial reference to the practice of the Dental profession. The oral practical examination comprises the several subjects included in the curriculum of professional education, and is conducted by the use of preparations, casts, drawings, &c. Members of the College, in the written examination, will only have to answer those questions set by the Section of the Board consisting of persons skilled in Dental Surgery; and in the oral examination will be examined only by that Section. A candidate whose qualifications shall be found insufficient will be referred back to his studies, and will not be admitted to re-examination within the period of six months, unless the Board shall otherwise determine. Examinations will be held in January and June.

The fee for the Diploma is Ten Guineas, over and above any stamp duty.

Note.—A ticket of admission to the Museum, to the Library, and to the College lectures, will be presented to each Candidate on his obtaining the Diploma.

Board of Examiners in Dental Surgery.—Henry Hancock, 96 Harley Street; John Hilton, 10 New Broad Street, E.C.; Frederick Le Gros Clark, 14 St. Thomas Street, E.C.; Samuel Cartwright, 32 Old Burlington Street, W.; G. A. Ibbetson, 19 Hanover Square, W.; S. J. A. Salter, 17 New Broad Street, E.C. EDWARD TRIMMER, *Secretary.*

DENTAL HOSPITAL.

Dental Officers, and the Days and Hours of Hospital Attendance.

Consulting Physician—Sir Thomas Watson, Bart., M.D.
Consulting Surgeon—Mr. Campbell De Morgan, F.R.S.

		Dental Surgeons.	*Assist.-Dental Surgeons.*
9 a.m.	Monday	Mr. Charles James Fox	Mr. Henry Moon.
„	Tuesday	„ Thomas Underwood	„ A. George Medwin.
„	Wednesday	„ George Gregson	„ Charles S. Tomes.
„	Thursday	„ Alfred Coleman	„ Edwin F. Lane.
„	Friday	„ T. H. G. Harding	„ Wm. P. Bartlett.
„	Saturday	„ Alfred Hill	„ S. H. Cartwright.

Anæsthetists—Monday, Mr. Bailey; Tuesday and Friday, Mr. Clover; Wednesday and Saturday, Mr. Braine.

Dental House-Surgeon—Mr. Claude Rogers.

Fees for two years' attendance, as required by R.C.S., £15 15s.

DENTAL SCHOOL.

SUMMER SESSION.

Dental Anatomy and Physiology (Human and Comparative)—Mr. Charles S. Tomes, M.A., M.R.C.S., L.D.S. These lectures will be delivered Wednesdays and Saturdays, at 8 A.M.

Dental Surgery and Pathology—Mr. S. H. Cartwright, M.R.C.S. These lectures will be delivered on Tuesdays, at 8 o'clock A.M.

WINTER SESSION.

Mechanical Dentistry—Mr. Turner, M.R.C.S. These lectures will be delivered on the evenings of Wednesday, at 7.

Metallurgy in its Application to Dental Purposes—Mr. G. H. Makins, M.R.C.S., F.C.S. These lectures will be delivered during the month of October, on Fridays, at 6.30 P.M.

Fees for Lectures, as required by R.C.S., £15 15s.

Fees to Single Courses.—Dental Anatomy and Physiology, one course, 3 guineas; two courses, 5 guineas. Dental Surgery, one course, 3 guineas; two courses, 5 guineas. Dental Mechanics, one course, 3 guineas; two courses, 5 guineas. Metallurgy, one course, 3 guineas; two courses, 5 guineas. Students who perform operations for filling teeth must provide their own instruments for the same. Further particulars may be obtained on application to the Dental Officer of the day, or the Treasurer, Mr. S. Cartwright.

NATIONAL DENTAL HOSPITAL, GREAT PORTLAND STREET.

The practice of this Hospital is recognised by the Royal College of Surgeons for the Dental Diploma. The hospital is open daily (Sundays excepted) for the reception of patients, at 9 A.M. Fee for two years' attendance on the practice of the hospital, as required by the curriculum of the College of Surgeons, £12 12s.

Hospital Staff.

Consulting Physicians—F. W. Pavy, M.D., B. W. Richardson, F.R.S., M.D.

Consulting Surgeons—Prof. Erichsen, F.R.C.S., Spencer Wells, Esq., F.R.C.S.

Consulting Dental Surgeon—J. Merryweather, Esq.

Dental Officers—Mr. A. Hockley, L.D.S., Mr. J. Steele, L.D.S., Mr. G. Williams, L.D.S., Mr. W. Perkins, L.D.S., Mr. H. T. Kempton, L.D.S., Mr. Harry Rose, L.D.S.

Assistant-Dental Surgeon—Mr. G. Gingell, L.D.S.

Hon. Sec.—A. Hockley.

DENTAL DISPENSARY, CATHERINE STREET, PLYMOUTH.

Physician—C. Albert Hingston, Esq., M.D. London.

Surgeon—Warren J. Isbell, Esq., L.R.C.P. Edin., F.R.C.S.

Consulting Dentist—Stratton J. Coles, Esq., M.O.S.

Dentists—F. A. Jewers, Esq., M.O.S.; W. V. Moore, Esq., D.L.R.C.S., M.O.S.; C. Spence Bate, Esq., F.R.S., D.L.R.C.S., late V.P.O.S., &c.; Francis H. Balkwill, Esq., D.L.R.C.S.

Treasurer—Alfred Payne Balkwill, Esq.
Hon. Sec.—E. Gasking Bennett, Esq.

The Dentists attend at 9 o'clock on Mondays, Wednesdays, Thursdays, and Saturdays, to stop, regulate, or extract teeth, or to adopt such other course as the necessity of the case may suggest.

DENTAL SCHOOL.

Certificates of attendance on the practice of this Dental Dispensary are recognised by the College of Surgeons as qualifying for the Diploma in Dental Surgery. The College will also recognise lectures delivered at the Dental Dispensary, Plymouth. Pupils of any of the Dental Surgeons of the Plymouth Dental Dispensary, or other Dentists holding a Diploma of the College of Surgeons, or Member of the Odontological Society, may attend the Dispensary on the day of such practitioner as may agree to accept such pupil or pupils, on the payment of £1 1s. per annum to the institution.

GENERAL HOSPITALS.

King's College.

DENTAL SURGERY.

Dental Surgeon—S. Cartwright, Esq., F.R.C.S.

Courses of Lectures on Dental Anatomy and Physiology, Dental Surgery, Mechanics and Metallurgy, are given during the Summer Session. The fee for the special Course of Dentistry is 15 guineas. Special Certificates of attendance on the Dental Practice of the Hospital will be given on payment of an extra fee of 5 guineas. During the month of March, Lectures on the Anatomy of the head and neck will be given by the Professor of Anatomy, with a special view to the convenience of the students of Dental Surgery. Lectures on Metallurgy, with the same object, will be given by the Professor of Chemistry during the month of February.

Students in Dental Surgery are divided into two classes. 1. Those who having attended the course of Study required for qualifying as a medical student, afterwards take up the following Special Course of Dentistry, viz.:—One course of Dental Anatomy and Physiology, ditto Surgery, ditto Mechanics, ditto Metallurgy, 15 guineas; two years Dental Hospital Practice, 15 guineas; amounting to £31 10s. 2. Those who only take up the curriculum required by the College of Surgeons for their Dental Diploma. These students must attend Anatomy, Physiology, Chemistry, Medicine, Surgery, Materia Medica, Practical Chemistry, Surgical Practice, two Winter Sessions, Special Dentistry Course (as above). The charge for this course will be £95 1s. 6d., if paid in one sum on entrance; or £100 if paid by the following instalments: viz., £60 on entrance, and £40 at the beginning of the second Winter Session. 3. Each student of the Special Dentistry Class must provide himself with a proper set of instruments, and will have to pay for the more expensive materials used by him in the course of his Dental practice. 4. The Special Lectures in Dentistry are given during the Summer Session.

Middlesex Hospital.

Dental Surgeon—J. Tomes, Esq., F.R.S.

Assistant Dental Surgeon—J. Turner, Esq., M.R.C.S., L.D.S.,

Fees for the Lectures required by the Royal College of Surgeons, forty guineas, either in one payment or by instalments of twenty-five guineas on entrance, and fifteen guineas at the beginning of the second winter session. Pupils receive instructions on Diseases of the Teeth and the Operations connected with them, daily at 9 A.M. Fee, £5 5s. Further information may be obtained from Dr. John Murray.

University College Hospital.

Dental Surgeon—G. A. Ibbetson, Esq., F.R.C.S., L.D.S., Lecturer on Dental Anatomy and Physiology, is giving a course of twelve lectures at University College on Tuesdays and Thursdays at 5 P.M., beginning in January. Fee, £2 2s. These lectures are recognized by the Royal College of Surgeons for the Diploma in Dental Surgery.

St. Bartholomew's Hospital and College.

Dental Surgeon and Lecturer—Alfred Coleman Esq., L.R.C.P. London, F.R.C.S., L.D.S., Dental Surgeon to the Dental Hospital of London.

Lectures on Dental Surgery, Anatomy, Physiology and Pathology during winter session; the fee for one course is £2 2s.; unlimited, £3 3s. These lectures are recognized by the Royal College of Surgeons as a course on Dental Surgery required for the Dental Diploma. The fee for general subjects for Dental students for the first winter is £26 5s., for the first summer £26 5s., or a single payment of £52 10s. The practice of the Dental department of this Hospital is recognized by the Royal College of Surgeons.

Charing Cross Hospital.

Dental Surgeon—J. Fairbank, Esq., M.R.C.S., who attends at the Hospital three days a week for Dental operations. A course of lectures on Dental Surgery is also given during the summer months. The fee at this Hospital for Dental Surgery is £49 7s.

Westminster Hospital.

Dental Surgeon—J. Walker, Esq., M.D., M.R.C.S., L.D.S.

Lectures on Dental Surgery are delivered by Mr. Walker, every Wednesday, at 9.30 A.M., and he also attends at the same hour on Saturdays for practical demonstrations of diseases and operations on the teeth. The fee for attendance on the lectures and practice is £5 for three months, and £8 for eight months, and the whole of the general lectures and surgical practice required for the Dental Diploma of the College of Surgeons can be attended for £30, payable in instalments.

Guy's Hospital Medical and Surgical School.

Dental Surgeon—J. Salter, Esq., F.R.S. Assistant Dental Surgeon, H. Moon, Esq.

Practical instruction in Dental Surgery is given every Thursday at 12 o'clock.

St. George's Hospital.

Dental Surgeon, Charles Vasey, Esq. L.D.S. Mr. Vasey attends at the hospital on Tuesdays and Saturdays from 9 to 10, and on Thursdays at 1 o'clock. Lectures on Dental Surgery are given by Mr. Vasey in the summer session. Fee, £1 1s. Gentlemen will be admitted to the lectures and hospital practice required for the Diploma in Dental Surgery by one payment of £45.

London Hospital Medical College.

Dental Surgeon—H. J. Barrett, Esq., M.R.C.S.

Mr. Barrett gives practical instructions on Tuesdays at 10 A.M. Fee, £2 2s. The lectures are delivered in March at 5 P.M.

St. Mary's Hospital Medical School.

Dental Surgeon—H. Howard Hayward, Esq., M.R.C.S., L.D.S.

Practical instruction in Dental operations is given on Wednesdays and Saturdays at 9.30 A.M. Also a special course of lectures on Dental Surgery. Fee for the course, £2 2s.

NOTES AND QUERIES.

A CORRESPONDENT wants to know the best way to nickelize steel instruments ?

CORRESPONDENCE.

To the Editor of the MONTHLY REVIEW OF DENTAL SURGERY.

SIR,—Will you allow me a small space to thank the editor of the *Missouri Dental Journal* for his candour in allowing that I have told some "unpleasant truths which should never have been permitted to be noised about." But surely he is not in earnest when he says they ought to have been kept secret. I cannot agree with him in thinking that the American schools will suffer from what I have said, or that I have shorn them of all their glory. The American schools have sufficient vitality to flourish when the writer of this and all his belongings shall have passed into oblivion.

I am unwilling to push this painful subject further. As the editor has honoured me with a place in his journal, I can leave it to his readers to "notice" how far I consider my "glance" at the Atlantic coast constitutes a journey through the States, or how far I have presumed to judge "all the educational institutions of the country." That I am capable of forming an opinion of the dental educational institutions of America I have conceit enough most firmly to believe. Indeed, I do not see anything appalling in the task beyond the very disagreeable conclusions which are, in some instances, forced upon the competent observer. I saw five of the American dental schools. Probably if I had seen the sixth or seventh I might have seen something different. As it is I have written down what I have seen, "nothing setting down in malice." That I have not written more is not from want of further knowledge. If the editor of the *Missouri Journal* can contradict anything I have written he may further the elucidation of truth. If he cannot, his attempt to depreciate what I say by banter and coarse wit will be almost as useless as the miscellaneous morsels of mangled humanity with which he could regale me would be in the teaching of anatomy.

I am, Sir, your obedient servant,

12 George Street, Hanover Square, London. J. SMITH TURNER.

To the Editor of the MONTHLY REVIEW OF DENTAL SURGERY.

SIR,—Would you allow me, through the medium of your journal, to make a few remarks showing the desirability of making it compulsory that every student, before commencing his studies for the L D.S. diploma, should pass the preliminary examination as required by the College of Surgeons for those who intend taking the Membership.

In these days of education, when every charity-boy is taught classics and mathematics, this could hardly be considered a hardship by any young man who intends taking the position of a gentleman, and it would save him the great annoyance of finding himself in the position which I now do.

On first entering the dental profession, I was anxious to place myself, if possible, in the first ranks, and was told that to do this it would be necessary to come to town for two years, and take the dental diploma. Acting on this, I joined myself to the Dental and St. Thomas's Hospitals, and for a time all went well; but as my knowledge of medical life became more extensive, I found that although the L.D.S. was considered quite sufficient to make a man a good dental surgeon, yet that the Membership gave him a better position in the medical world. Feeling the justice of this, and wishing to spare no expense, I resolved to take the higher degree, and applied to the College for that purpose; but here my troubles began. "Have you passed your preliminary?" was the first question asked. "No."—"Then, sir, 'tis useless for you to attempt to be allowed to come up for examination."

Here, then, I found myself brought to a stand-still, simply because I had not passed an examination which every boy of sixteen could get through without difficulty. From my personal knowledge of many members of the Managing Committee of our Hospital, I feel sure it would be a source of regret to them that any student should be placed in the position in which I am, and this should cause them to endeavour to prevent a recurrence of such an event.

I would not, for a moment, infer that the curriculum laid down, if honestly carried out, is not quite as much as is required; but as I know that three-fourths of the staff wish the students to take the higher degree, it seems a pity that they do not remove what has proved a barrier to so many. As regards the L.D.S. examination, I must say I consider it a fair and just one—one which no young man, who has acted honestly to himself, his friends, and his hospitals, need fear, but one, nevertheless, which should not be thought of lightly. Of the written you can judge, as doubtless the questions will be published in your journal; of the *vivâ voce* I can only say, that the questions are fair and practical ones, and are put in a straightforward and gentlemanly manner, and there is no attempt at that catch questioning and bullying of which candidates so justly complain. Apologizing for the length of my letter,

I remain, faithfully yours,

W. MERSON.

To the Editor of the MONTHLY REVIEW OF DENTAL SURGERY.

SIR,—Will you kindly afford me space in your journal to call the attention of the profession to the fact that an L.D.S. of the College of Surgeons follows the practice of advertising in a daily newspaper. I believe the diploma comes under the same rules as that of Membership of the College, and if a member commits the same offence he holds himself liable to have his diploma confiscated. I enclose the advertisement, and am, Sir, yours, &c., WALTER TYRRELL.

Exeter.

Obituary.

MR. CHARLES RODWAY.

(TORQUAY TIMES.)

WE deeply regret to have the painful duty of recording the almost sudden death, early on 10th August, of Mr. Charles Allin Rodway, of the firm of Messrs. Rodway and Son, dentists, Torquay. The deceased, who resided at Kingskerswell, hired a boat at Torquay on Saturday morning, for the purpose of having a bathe, intending to return in half-an-hour. On going out it was noticed that his hat blew off into the water, and that on recovering it he did not put it on again. During the day his father-in-law, Mr. Edwards, having occasion to see him, called at Park Place, and heard that he had not been there, although he had numerous appointments. On learning this Mr. Edwards felt much surprised, and went to Kingskerswell to inquire for him, where he heard that he had left for business, to all appearance in good health, at his usual time. Mr. Edwards then went to Goodrington, where Mrs. Rodway and the children were staying, but found on arriving that he had not been there. Mrs. Rodway became very much alarmed, knowing how her husband had lately been suffering from shooting pains in his head, and for some time previously from constant sickness. She accordingly returned at once with her father to Kingskerswell, hoping to hear of her husband's return, but they had there no news of him.

About two hours after Mrs. Rodway had left Goodrington, namely, 7.30 p.m., Mr. Rodway arrived there in his boat, but with only one oar, and went at once to the house where his family were lodging, and saw the governess and children. He told the former he had had a swim, and that he thought he had had a sunstroke. He also said that he had never felt more ill in his life—that he could not see distinctly, and that he had had nothing to eat since breakfast. She, noticing how ill he looked, begged him not to return, and got him some refreshment. After taking a little he seemed revived, and expressed his intention to return in the boat, and tried to obtain another oar, but as this could not be got he went off with only the one.

About eight o'clock Brown, the boatman, feeling uneasy at the length of time Mr. Rodway had been out, took a boat to see if he could find him. Mr. Guyer, who happened to be on the pier at the time, offered to accompany him, and the two went out together. They found Mr. Rodway in the boat off Corbon's Head, pulling with one oar, but apparently nothing amiss with him. They all landed at the quay. Finding he was too late to return to Kingskerswell by train, Mr. Rodway said he must take a cab. Mr. Guyer, noticing that he appeared fatigued, offered to call a cab for him, and Mr. Rodway accordingly waited in Mr. Guyer's shop until the cab arrived.

At this time he appeared very cheerful, and left apparently nothing the worse for his day's adventure. He made a purchase at a shop at Torre, and paid the toll at the turnpike-gate; and nothing unusual in his demeanour was observed. On his arrival at Kingskerswell he was found to be almost insensible, and only able to say a few words. Dr. Brown was sent for immediately, and assisted him to bed, where, after a short time, in spite of all the remedies that were used, stertorous breathing came on, and he died about 4 A.M. on Sunday.

The deceased gentleman was much esteemed in this town and neighbourhood for his frank and genial disposition, and his death under such distressing circumstances, and in the prime of life, is much lamented. Deep sympathy is felt for Mrs. Rodway and the family.

The funeral took place on Thursday, at Kingskerswell, at 11 A.M. The body was borne to the grave, at their special request, by eight of his personal friends.

The service was impressively read by the Rev. George Morris, vicar of Kingskerswell, to a large and attentive congregation. The coffin of polished oak, was covered with a black pall, on which was placed a cross and two wreaths, composed of choice white flowers, the work of loving hands. On the removal of the pall these were laid on the coffin, and lowered with it into the grave. The funeral was attended by many friends from Newton, Torquay, Kingskerswell, Abbotskerswell, Coffinswell, Staverton, Littlehampton, Berry, Pomeroy, Totnes, and other places.

To Correspondents.

ALL communications intended for the Editor should be addressed to the care of Messrs. SMITH, ELDER, & Co., 15 Waterloo Place, Pall Mall.

All inquiries respecting Advertisements and Subscriptions should be sent to GEORGE BUTCHER, 4, Crane Court, Fleet Street, E.C.

THE MONTHLY REVIEW OF DENTAL SURGERY.

No. V. OCTOBER, 1873. Vol. II.

THE OPENING OF THE WINTER SESSION.

Amongst the accounts published in the Medical Journals of the opening addresses connected with the commencement of the Winter Session, the London School of Dental Surgery is made conspicuous by its absence. The Governing Body of that institution, either from modesty or lack of enterprise, have declined to do as other Schools do, and are content to allow their students to pay their fees and take their seats on the benches of the lecture theatre without one word of welcome, encouragement, or advice. They can scarcely plead as an excuse that they possess a staff, the members of which are not prepared to deliver an introductory lecture; for only last year one of their number was invited by the authorities of Harvard University to come 3,000 miles to give the inaugural address to a class of students numerically smaller than that assembling at Soho Square.

Whilst our American brethren thus showed their appreciation of a name held in highest honour amongst the whole Dental Profession, we at home have failed to take advantage of the eminent position in science held by so many of the staff of the London Dental School and Hospital, and have allowed the Session to commence without any demonstration of life or energy. This year, above all years, it was desirable that the School should take a fair place with its kindred educational institutions; for not only should its removal to the new building in Leicester Square have been an inducement to bring it well before the Profession and general public, but the announcement of a rival institution at King's

College was an additional reason for using every fair means for attracting students to "The London School of Dental Surgery." Possibly with a new Hospital, we may have the advent of a more energetic governing body to the School; as things stand at present, however, we can only regret the past, and trust to the future for an improvement on the existing state of affairs.

THE AMERICAN DENTAL SOCIETY OF EUROPE.

Our American friends seem really irrepressible. Their last novelty has been the formation of the American Dental Society of Europe. So ambitious are their views, that they must needs climb six thousand feet above the sea, to the top of the Rigi, to elect their office-bearers; and then, having attained to such an elevation, they not unnaturally discuss Dental progress. Their Recording Secretary reports that they "hope by next year to offer valuable results of observations made in this Old World. In view of the spot where Swiss Liberty was born, the first American Dental Society of Europe was born. May she ever maintain her elevated position! May she hold her members as high, and may her lofty example raise the standard on every mountain-top in this country!"

This sounds very like a joke, but they seem to have been in earnest, for the election of office-bearers must have included nearly every one present. It should be mentioned that this era in "this Old World's" history took place on the "fourth of July."

TESTIMONIAL TO DR. BARNUM, INVENTOR OF THE RUBBER-DAM.

The California State Dental Association, at its last annual meeting, did that which the Dental Profession in England should have done long ago—namely, presented a testimonial to Dr. Barnum, "as a mark of esteem for the liberal contribution of his great invention, the rubber-dam." It has been more widely adopted in England than perhaps any invention of recent times, and has proved most valuable. Dr. Barnum gave it to the profession ungrudgingly, without retaining any royalty or pecuniary interest, and so far as this country is concerned, we have simply shown our appreciation of it by adopting it in practice.

His own countrymen have now set us an example that we may perhaps think it well to follow, though it would have been pleasanter to have taken the lead in acknowledging a benefit that has been conferred upon the profession in a truly professional spirit by Dr. Barnum.

ACCIDENT UNDER NITROUS OXIDE.

A CASE is reported in *The Dental Cosmos* for September, of a lady, while under the influence of nitrous oxide, swallowing a portion of the crown of a second lower molar; it passed into the bronchial tube, and remained lodged there for five weeks. It was then coughed up; the patient had been treated by her physician for consumption.

CASES OF NEURALGIA CURED BY THE USE OF CONSTANT GALVANIC CURRENT.

A MAN, æt. 40, complaining of frontal neuralgia of 15 days' duration, was treated by galvanism. It was applied for five minutes. The constant current was used, small sponges being placed on the conductors. Patient radically cured.

A young lady suffering from neuralgia of 10 days' standing (after the extraction of a tooth), was treated by galvanism. The first application had little success. After the second application the patient was free from pain for a fortnight; was finally cured after a third application.

A servant, æt. 32, having suffered for about three months from severe facial neuralgia, which prevented all repose, was treated by galvanism. After five minutes' application of the current to each side of the face all pain ceased, and has not since returned.

ON THE TREATMENT OF EXPOSED PULP.

By W. J. Barkas, M.R.C.S.E., L.R.C.P. Lond.

It is not my intention to enter into the controversy as to whether an exposed pulp should be destroyed or preserved, for my comparatively limited experience would not justify so decided an expression of opinion. But I, like most medical men, have a decided tendency towards conservatism in surgery, and do not feel justified in destroying any tissue that there is a probability of saving, and would pursue any plan of treatment that was even comparatively successful in attaining that object. This feeling has induced me, therefore, to adopt the treatment that has, in the hands of many dentists, been shown to preserve the tooth and what remains of its pulp, and if that course should not succeed after a few trials, I would then try the plan of destroying the pulp; but the latter course will, I think, not be necessary, for I have found conservatism very successful.

The treatment I approve is simply this: if the pulp should be accidentally exposed during the excavation of a carious tooth, I would, directly the bleeding was arrested, cap it with a small piece of blotting-paper soaked with strong carbolic acid, having first swabbed the cavity with the acid, and then fill with Fletcher's enamel or other temporary stopping. When the pulp is exposed, however, during the process of decay, and is in a state of suppuration, I first dress it with carbolic acid so long as the pus is offensive or is very plentiful; this I continue to do until the discharge is greatly, if not quite, stopped, and is perfectly free from smell. When this stage has been reached I cap and fill it in the same manner as when the pulp is accidentally exposed. Thus far my treatment is simply that pursued by many others, and if no bad symptoms arise I, of course, interfere no further; but it sometimes will happen that after the pulp has been dressed and the tooth stopped in an apparently satisfactory manner, acute pain comes on within two or three days, with great tenderness on percussion, some swelling of face or gums—in fact, all the symptoms of commencing inflammation of the alveolar periosteum. It is at this stage that treatment must be undertaken if any good is intended to be done, for if the inflammation has proceeded so far as to produce abscess, there is nothing for it but to drill through or withdraw the stopping, or, it may be, to extract the tooth. Within the last six months there have been two of my cases in which the above symptoms appeared: in the first case the pain commenced on the second day, in the second case on the sixth day after stopping; so it will be seen that they were genuine cases of commencing alveolar abscess, and not due to the Fletcher's enamel, which often causes pain for two or three hours after its insertion into the cavity, even when the pulp is not exposed.

In the first case, it appeared to me that if the chloride of ammonium relieved the pain in certain cases of toothache, as I described in the February number of this Review, and allays inflammation in fibrous tissues, like the sclerotic coat of the eye-ball, as has been proved by the Germans, I considered it would be quite legitimate to prescribe it before adopting any other proceedings: this I did, and was much gratified to find that the pain, &c., was relieved within forty-eight hours, leaving only slight tenderness on percussion and during mastication; this also passed off in a few days. It is now six months since these symptoms occurred, and there has been no return of them.

In the second case, the symptoms did not make their appearance, as I have said, till the sixth day after stopping, and were caused probably by exposure to cold and want of nourishment, for the patient had been fasting for a long period, and had been industriously visiting among the poor. The toothache was accompanied with a good deal of feverishness, headache, langour, and slight sickness. I did not see him till the evening of the eighth day (Saturday), and then ordered him a warm bath, some beef-tea, and five grains of quinæ sulph. at bedtime, and the chloride of ammonia three times a day. On the Sunday the pain was considerably abated and the feverishness had disappeared, and by Tuesday the patient was better. One month has since elapsed without any return of the toothache.

I have notes of twelve cases of exposed pulp in which I pursued the above plan of stopping during the last six months. The two recorded above were the only cases in which unfavourable symptoms arose, and these were, I believe, cured by the early administration of the chloride of ammonium. I am well aware that the above cases are not of themselves numerous enough to be of much weight, but I have recorded them as I consider this plan of treatment to be worthy of a more extended trial, and shall be very glad if other dentists will pursue it and publish their experience, whether favourable or otherwise.

THE TRANSMISSION OF HEREDITARY PECULIARITIES.

By Oakley Coles, L.D.S.R.C.S.,
Dental Surgeon to the Hospital for Diseases of the Throat.

The subject of transmission of peculiarities from one generation to another is of great interest to the dental surgeon, as he is often called upon to give an opinion as to the prospects of a perfect dental arrangement being developed in a child of parents with defective teeth, and further as to the liability of a cleft palate being reproduced in any children born of parents one of whom has such a deformity.

It is, of course, very difficult to arrive at an absolutely certain conclusion as to how far these latter peculiarities are transmitted in the direct line or through collateral branches, and it is only by accumulating cases that we can obtain such records as will enable us to form even an approximate estimate of the liability to their transmission. With a view of adding to the list of recorded cases, rather than to the bringing forward any new conclusions, I publish the following cases :—

Case 1.—J. B., æt. 7. Cleft of soft palate only. Father healthy, mother delicate. The three first children born were quite healthy ; the fourth (the patient, J. B.) had a cleft of the soft palate ; the fifth and last child has cleft of both hard and soft palate. No history of cleft palate in the family.

Case 2.—E. D., æt. 35. Cleft of hard and soft palate, and alveolar ridge, with double hare-lip. Married. Four children living without any defect, though the mother has dreaded it each time she has been pregnant.

Case 3.—J. W. M., æt. 32. Cleft of soft palate and partly of hard palate. No hare-lip. Three children living: eldest, æt. 5 (female), cleft of soft palate ; the second child, æt. 3 (female), has the uvula bifurcated ; and the youngest child (also a girl) is born with a high palate, but without any cleft. The mother is healthy and the children well nourished.

Case 4.—C. B., æt. 45. Cleft of hard and soft palate and alveolar ridge, with double hare-lip. The patient is the father of five healthy children, born without any deformity. No history of cleft palate in the family.

Case 5.—H. C. P., æt. 34. Cleft of hard and soft palate and alveolar ridge. Married, but no children. The father of the patient has not a cleft but a very high palate, so that speech is interfered with, and sounds as if the palate were defective.

Case 6.—W. R., æt. 30. Cleft of hard and soft palate ; married, and has children without any defect. The patient, W. R., has two sisters—one fifteen years younger, and the other five years older than himself—both having cleft palate. There is, however, no further history of the deformity in the family or ancestry.

ODONTOMES.

(Traité des Tumeurs. Par Paul Broca.)

Odontomes Generally.

IV.—*Radicular Period.*

(*Continued from page* 153.)

This fourth and last period of the evolution of dental follicles is characterised by the *formation of the fangs.* At the moment when this period commences, all the intra-follicular surface of the bulb is surrounded by a layer of dentine, which is covered again by a layer of enamel. The crown is complete; it extends as far as the base of the pulp, and consequently reaches the level of the circular insertion, "*col du follicule*," upon this base. That is a limit which the crown cannot pass, and which constitutes the neck of the tooth. Therefore the base of the pulp, the neck of the tooth, and the neck of the follicle are situated exactly upon the same level. But this disposition can only last a short time. In proportion as the fang is formed, the neck of the tooth is elevated above the neck of the follicle, which besides does not cease to narrowly enclose the base of the pulp.

It is at the level of this base that all the phenomena occur which take place in the formation of the fangs. To simplify the description, I shall take the case of a tooth which has only a single fang. The fang being no longer able to increase in width, grows exclusively in height by a sort of elevation which is effected on the plane itself of the base. In growing it necessarily elevates the crown, and the neck is consequently separated from the neck of the follicle. It appears, therefore, that the part of the pulp newly formed is found bare at the bottom of the follicle. It is, however, of no consequence: the dentine of the crown continually extends over its surface, and covers it entirely. Thus, on the one hand, the pulp arises, but on the other, the dentine cone descends, so that the base of this cone always corresponds exactly to the base of the pulp, and the growing dentine is in contact with the neck of the follicle. It is at this level that the *cementum* is formed, which, in the human subject, only exists in the radicular portion of the tooth. The radicular cementum is not produced by an especial organ like the coronary cementum, which forms the exterior envelope of the crown in many animals. It is the vessels of the neck of the follicle which furnish the blastema in the heart of which they are arranged. As the fang is developed the neck of the follicle deposits on its surface ossific material. This quickly becomes organised; the dentine of recent formation is also covered with a layer of cementum, which adheres closely to it, and which thus constitutes on the fang a coating of osseous tissue.

The production of the cementum is continued during the whole of the radicular period. We find, also, a large quantity of cementum in the odontomes occurring at this period. They can even be exclusively composed of it.

The cementum is characterised by the presence of osteoblasts (*see* Fig. 12 C), which do not sensibly differ from those of the osseous tissue. In certain animals it forms a thick layer pierced by vascular canaliculi; but in man it possesses neither canaliculi nor vessels.

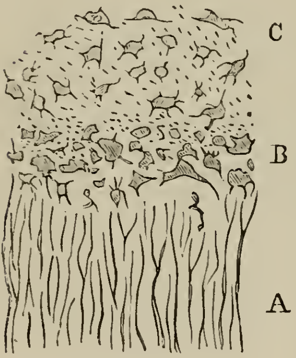

Fig. 12.

Cementum and dentine (vertical section of the incisor of an adult), 400 diameters.

A—Dentinal tubules.

B—The terminal lacunæ of the dentinal tubules.

C—Cementum, characterised by the presence of osteoblasts.

We have just seen that the formation of the fang is a progressive phenomenon, which takes place at the level of the neck of the follicle. It is here that are simultaneously produced, proportionably as the fang grows, the dentine furnished by the pulp, and the cementum furnished by the neck of the follicle. The fang is developed then in the form of a tube, whose opening always exactly encircles the base of the pulp. This opening is at first almost as large as the cavity of the crown; in other words, has almost the form of a cylinder scarcely completed at the level of the crown. If things always remained in this state, nothing would hinder the pulp from growing indefinitely, and the tooth might increase without limit. Comparative anatomy offers some examples. But more frequently the fang, as it extends, becomes smaller, the radicular tube encroaches more and more upon the base of the pulp: this base is only a pedicle, whose size is progressively diminished, and which is finally reduced to a very fine vascular nervous filament. The fang is then complete; henceforth its size and that of the tooth no longer change. As long as the radicular tube remains widely open, the pulp may contribute to the work of hypertrophy; it cannot overcome the inextricable sheath which surrounds it, but, like the inflamed marrow of the bone, it can form at the extremity of the radicular tube a kind of hernia, which might later be considerably developed in size.

On the other side, the neck of the follicle can produce in excess the ossific material out of which the cementum arises, and an accidental production arises which, happening to be in continuity with the base of the pulp, can compress it, drive it back, and thus interrupt or even entirely arrest the formation of the root. These radicular odontomes are characterised by the presence of a complete crown, and are thus distinguishd from the coronary odontomes, whose crown is not perfected. We even find here dental particles where it is easy to recognise the outline of a fang. Finally, these tumours, after their dentification, contain cementum, and in that differ from all the odontomes which are formed in man during the preceding periods.

But from the moment when the pulp is pedunculated, and where the orifice of the radicular tube is observable as contracted, the formation of these odontomes is no longer possible; the pulp is sufficiently imprisoned to be no longer exposed to hypertrophy. Then, even if the production of the cementum be later exaggerated in such a manner as to constitute a tumour, it cannot subject the already-formed fang to deformity: it would not be an odontome, but only a cementary exostosis, a very different lesion thus from that which we have previously spoken of. Up to the present time I have supposed the tooth only to have a single fang. When there are several fangs, the essential phenomena are identical. A single radicular tube commences at first to form round the pulp; then the base of the pulp divides into as many segments as there are fangs, and the radicular tube being prolonged over each one of these segments, divides into several fangs, which grow and become perfected as in the preceding case. Each one of these fangs *isolated*, may become the seat of a radicular odontome.

In man the radicular odontomes are formed before the epoch of eruption, for that only occurs when the development of the fang is sufficiently advanced for the pedicle of the pulp to be contracted. We can conceive that from that time the ossification of the corresponding tooth should be the most disturbed, or even hindered, by the development of the tumour which dilates the alveolus, which hollows in the thickness of the maxillary bone a vast cavity, and which even frequently changes the direction of the crown. The eruption may be nevertheless effected when the tumour is developed, in such a manner that the tooth does not noticeably differ from others. The latter then takes its rank and position, although it has been formed at the same time with a voluminous tumour contained in the depth of the maxillary.

I repeat, then, in man, and in all animals in which the teeth are developed as in him, the odontome the more backward is always in advance of the epoch of the eruption of the corresponding tooth. We can also establish as an invariable principle, that the odontomes cannot appear during the periods of the formation and growth of the teeth. This rule, however, appears to admit of the exceptions—that is, because in certain animals the growth, or if one likes, the formation of the teeth, may be prolonged throughout the whole period of eruption. It is this which occurs amongst many of the herbivora; thus, for example, the fangs of the molars in the horse are still opened to a considerable extent, although the crown is altogether out of the alveolus. As to the incisors of rabbits, they never have a true root. They are composed of a shaft without constriction, surmounting a conical and sessile pulp, the surface of which produces without cessation the new layers of dentine; and it is thus that they increase throughout the whole of life (*a*).

We have just followed the evolution of the teeth, from the epoch of the formation of the bulb until the moment when the completion of their fangs puts an end to their growth. The phenomena of dentification have, nevertheless, not yet concluded: they go on continuously until an advanced age. The thickness of the layer of dentine, increasing more and more, reduces proportionally the space set apart for the pulp; it may even happen that the pulp thus ends by wasting away

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(*a*) See Oudet, "Expériences sur l'Accroissement continu et la Réproduction de Dents chez les Lapins." Paris, 1823, gr. in-8. "De l'Accroissement continu des Incisors chez les Rongeurs." Paris, 1850, gr. in-8 (J. B. Baillière). We find more complete details upon the subject and upon many other questions upon odontology in the important work published more recently by the same author, and entitled, "Recherches Anatomiques, Physiologiques, et Microscopiques sur les Dents et sur leurs Maladies." Paris, 1862, 1 vol. in-8.

completely, and that the spontaneous shedding of the tooth may be the consequence. This is what is frequently observed in aged people. This dentification retarded can, without doubt, present anomalies; it may give rise to tumours within the pulp-cavity; but they do not modify at all the external form of the tooth, and in this they differ entirely from odontomes.

Far from being the cause of hypertrophy of the pulp, they are of such a nature, on the contrary, that actually they cannot be developed without causing atrophy of that pulp; that is to say, without having attained to their proper size. They cannot then ever entirely fill the pulp-cavity, nor, for a very good reason, exercise upon the walls of this cavity sufficient pressure to bulge them out.

I have not established in the preceding remarks any distinction between the teeth of the primary and those of the secondary dentition. Both one and the other present, in fact, in their development the same phases, and are subject in the same manner to the accidents of hypergenesis which give rise to odontomes. I shall speak also of the supplementary or supernumerary teeth, which sometimes are developed in the jaws, and which may even, by one of those aberrations of Nature which are known under the name of *hétérotopies,* be formed in other parts than the jaws. I do not speak of congenital dentigerous cysts, which in the human subject are sometimes within the midst of the soft parts, and which differ obviously from the follicles of normal teeth by their origin and development as well as by their connections. It does not appear that they can become the nursery (*le siége du travail*) which produces the odontomes; up to the present time, at least, I have not known an example. But we sometimes find amongst herbivora, in the region of the cranium, and especially at the level or in the vicinity of the temporal bone, true dental follicles, which rest upon the skeleton, which undergo exactly the same evolution as those of normal teeth, and the bulbs of which may in hypertrophying constitute a remarkable variety of odontomes. I shall give to these peculiar tumours, which at present have been observed only in the horse, the name of *odontômes heterotopiques.*

ERUPTION OF THE TEETH.

By Herr Robert Baume.

(Vierteljahrsschrift).

(*Continued from page* 156.)

The accuracy of the above examples is not to be disputed, for each kind of tooth is erupted at well-known periods, and requires about two years for the development of the fang. Teeth of the different sorts are cut on the average at intervals of two years. Accordingly the formation of the fangs of the next coming tooth commences as soon as those of its predecessor are finished. Consequently, according to the theory of Wedl, the fang formation of each newly erupted kind of tooth must go along with the increase of 1 centimetre in the depth of the jaw. As I believe I have pointed out, the increase of the length of the fang has nothing to do with the increase of depth in the jaw. We will now observe a single case of this developing period. If we compare, for example, the lower jaw of an individual of ten years with that of an individual of twelve years, we find on an average an increase in depth of perhaps 2 millimetres. But from the tenth to the twelfth year are developed the fangs of the first bicuspids, which become during this time at least 1 centimetre longer. According to this computation, the growth of the fang and the growth of the jaw bear no proportion and have no relation to one another; it is obvious that the fang grows much quicker, as whilst the jaw has increased 2 millimetres in depth the fang has grown more than 1 centimetre. The question now arises as to how the increase of the length of the fang is effected. As the fang grows considerably quicker than the jaw, so really there is only one thing possible; namely, that the fang *grows into the jaw*—is lengthened at the cost of the jawbone.

The fang is, as I have already shown, after the eruption of the crown, enclosed in an exactly-fitting alveolus. The fang now increases, so of course the jaw previously must give place. For this purpose there must ensue a process of resorption on the floor of the alveolus of the already perfected bone; and this really occurs, as will be presently shown, by the help of the pulp from which fine granulations appear. The growing fang of the tooth germ cannot well undertake the function of a resorbing structure, as ossification takes place very rapidly after its development, so that it cannot assist in the resorption of the alveolar bone. Against this it is universally known that the bone surrounding the pulp is constantly being resorbed, precisely by the pulp. I take it, consequently, that in these cases in question granulation follows on the floor of the alveolus, through which the alveolar bone, which stands in the way of the growing fang, is resorbed.

A supplementary resorption of the bony structure surrounding the fang frequently comes under observation in pathology. As is shown from the evidence of pathological anatomy, granulation from the pulp is the cause. I shall next mention, from this series of diseased appearances in the alveolus, alveolar abscess, by which is understood a purulent, disintegrating, saccular outgrowth of the periosteum, especially occurring at the apex of the fang. The saccular protruberance, as well as the surrounding hyperplasia of the above-mentioned membrane especially, may exist many years without inconvenience to the patient and without becoming purulent. Should a tooth be extracted having such an appendage at the end of the fang, the latter may be easily withdrawn with the fang. The texture of these abscesses is in general very dense and not easily torn. In favourably-situated places—for example, where a large capsule is appended to a short fang-stump—a dark red granulation may be easily seen in the depth of the alveolus. In all cases granulation may be proved by using the sound. Pressing firmly on the place where the periosteal growth is situated, we come in contact with a rough, very porous bone. On comparing this condition with a corresponding one in macerated jaws, we observe in the latter a sac-like cavity in the bone in the bottom of the alveolus. This cavity is surrounded by a spongy kind of bone (S. Wedl, *Atl. z. Pathol. d. Zähne,* Figs. 124, 125, 127). We therefore observe in this place, in which a firm lamella was formerly found, quite clearly the appearance of dissolved bone, and have at the same time found a standpoint for future investigation. When the fibrous capsule is removed from the alveolus, nothing of the *periosteum* is left; and as an explanation of all that has taken place previously in dissolution and depression of the bone, there only remains the *pulp,* which is well known to possess the property of dissolving bone, and, on the other hand, to form it anew, which function the pulp fulfils during the whole of life. In the case quoted, it may be pathologically proved that on account of the granulation from the pulp which has appeared in the alveolus, the bone will be resorbed in order to make way for the protuberance of the fibrous membrane of the fang, often of considerable circumference at the apex of the fang. The observation of these facts proves that the alveolus must be consumed by resorption in consequence of the widening out of the tooth membrane, and that the alveolus must accommodate itself to the whims of Nature. It must at every place give way to the tooth, even when it takes up a position from abnormal development of texture, for example, by the excessive growth of the dental membrane and in large exostoses. It remains now to prove that the growth of the fang happens in the same way, that is to say, under gradual resorption of the bone of the alveolus which stands in the way. The probability of my views on this point must already be obvious from the foregoing description.

As I have already mentioned, the floor of the alveolus, in which a rudimentary fang is situate, is very porous and pierced by sieve-like openings of different sizes. Such a condition of the bony layer reminds us of the process of resorption over again. That actual resorption occurs here can be easily proved by the microscopical observation of such a bone lamella. We find, namely, here a bony substance with distinct lamellar structure and with bone corpuscles, which are provided with many processes; this condition shows that there cannot be question as to a young bony texture or a new formation on the floor of the alveolus. In opposition to this we see a marked deviation from normal structure in the Haversian canals, which are considerably widened. The *width of the pulp* canal is not in this case a sign of the formation of *new bone*, but of the *resorption of old bone.* On the upper surface of the lamella, as well as in the larger openings of the same, and in the widened Haversian canal, may be observed a young fibrous structure, which presents the same appearance as that which the tooth at the time of eruption presents from its alveolus. This structure consists likewise principally of round cells, with small dark nuclei. I conclude, from the appearance of the said structure in the Haversian canal, also in this case, that it has its origin in fibrous texture of the pulp and of the pulp cavity of the bone. *The space for the growing fang is therefore gained by the absorption of the bony substance standing in its way; the resorption is effected through granulations from the pulp.*

The absorption of the already perfected bone through the pulp is quite a normal proceeding, and through which can be exclusively explained the growth and formation of the pulp cavity in the bone. In pathology, in rachitis and craniotabes, we find a preponderance of resorption and bone formation. When the length of the fang is completed, the necessity for the increased growth of pulp, and consequent absorption of bone, ceases, and the alveolus will by this time be in the form in which we later see it when normal, when the spaces are filled up by new formation of bone, and the many openings by a firm lamella which no longer shows porosity under the microscope. As I have stated, the growth of the root keeps pace with the resorption of the floor of the alveolus. A single case, which has been published, shows that an incongruity between the two processes in question may occur. Humm relates the following case (*Deutsche Vierteljahrsschrift für Zahnheilkunde*, 1861, s. 161): "In a little girl, age two and a-half years at the present time, the temporary teeth had been cut in the regular manner, and dentition finished in the second year. At the age of one year and three months the crown of the lateral incisor retreated into the jaw. The tooth is neither loose nor discoloured." Humm finds no explanation for this at present isolated case. I believe here it may be assumed that a too hasty resorption took place in the alveolus, so that consequently a larger empty space than was necessary for the growth of the fang was produced. The tooth was then pushed into the new space by mastication, or biting upon its antagonist, and was soon fixed in that position, by a new formation of bone. Gradually it was in this manner pushed back the whole length of the crown into the jaw.

From the previous deductions it has at all events become clear that the fang grows into the jaw, because the bone substance of the floor of the alveolus is correspondingly absorbed to the growth of the fang. This deduction, the correctness of which I believe I have shown by numerous facts, is much simpler than earlier hypotheses, and is sufficient to explain abnormalities in fang formation. According to the theory of Wedl and Tomes, whose error I have, at all events, certainly shown, one might easily become embarrassed when an explanation is required of the so frequently occurring crookedness of the fang. Still more is this the case by rectangular curvature of the fang, or by an horizontal position of the whole tooth. It follows from my observations, that the growing fang extends without reference to the bone; the latter must regulate itself according to the growth of the fang. The fang portion of the tooth is formed in an entirely different manner as regards form, size, and position; the jaw must adapt itself to all these caprices of nature, and this is brought about by resorption of the bone at that point where it is decided that the fang takes up a position.

GUTTA-PERCHA AND ITS APPLICATION TO MECHANICAL DENTISTRY.

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I propose calling attention to the subject of gutta-percha and its application to mechanical dentistry. First we will glance briefly at its history—that is, its discovery, the mode of preparing it, the various uses to which it is applied, and especially the use we make of it as a valuable auxiliary in our laboratory. Twenty years have not yet elapsed since gutta-percha was unknown in this country; but within that time how truly marvellous has been the spread of knowledge regarding it! It is not too much to say that every child in the present day is quite familiar with it. We see it in every variety of shape, and adapted to a thousand different purposes in the arts, sciences, and manufactures, purposes as varied as they are useful, from the delicate adaptation of it to the mouth of beauty, to the rough sole on the shoe of the labourer. This need not surprise us when we consider the valuable and peculiar properties it possesses, its power of resisting the action of most chemical agents, its unchangeableness under the influence of cold and damp, and its hardness combined with great toughness. From its plastic character it has the capability of being moulded into the most delicate, minute, and varied forms, able to resist the roughest usage, yet capable of being readily changed, without injury to the materials, into others still more varied, under the simple influence of a little hot water.

It is generally supposed that the merit of the first introduction of gutta-percha into England is due to Dr. Montgomery, of the East India Company's Medical Service; but the honour of the discovery is due to Mr. Thomas Lobb, a talented agent of the well-known florists, Messrs. Veitch, of Exeter. This gentleman, after carefully examining the tree which produced it, sent home specimens of the parts necessary to decide its botanical characteristics, together with small sections of the dried wood and of the hardened juice. In April, 1843, Dr. d'Almedia presented some specimens of gutta-percha to "The Royal Society of Arts of London," which simply acknowledged the receipt of the gift. Soon after Dr. William Montgomery, through Mr. Solly, placed before the Society several specimens of the same substance in different stages of preparation, and before long the Society's gold medal was awarded to the doctor for his very valuable discovery (?), forgetful of the unpretending botanist, or the less influential foreigner, who was by priority really entitled to it.

The trees which produce gutta-percha grow to a considerable size, varying from sixty to eighty feet in height, and measuring from eight to twelve feet in circumference. They grow in great abundance on the shores of the Straits of Malacca, Singapore, and Borneo, and other islands of the Indian Archipelago. The foliage is of a pale green colour on the upper side, and covered with reddish brown hairs beneath. Specimens of the flowers and fruit are exceedingly difficult to obtain. The tree flourishes luxuriantly in alluvial soils, at the foot of hills, and forms often in such situations the jungle.

Gutta-percha is the concrete juice of the tree. It differs from india-rubber, chiefly in being more elastic, and in becoming soft and plastic at a heat ranging between 135° and 165° Fah. At 200° it is soft and ductile, without stickiness, and may be moulded into any form. At 248° it melts, and on cooling, remains in a pasty glutinous state. On distillation it yields a peculiar ethereal oil, identical in chemical constitution with caoutchoucine. It is not acted on by strong alkaline lyes, nor by most of the acids, even when concentrated. Nitric and sulphuric acids, however, rapidly destroy it. Its best solvents are chloroform, bisulphate of carbon, ether, benzole, rectified mineral naphtha, and rectified oil of turpentine. All these dissolve it readily, but the first on the list with the greatest facility. Immersed in water, buried in damp earth, or exposed in a dark moist situation, it is very durable, but freely exposed to light and air, it becomes brittle, something like common resin.

It is very difficult to obtain gutta-percha free from adulteration, that generally sold in the shops being far from pure, notwithstanding all that has been said to the contrary.

After the natives have cut down the full-grown trees, they make rings in the bark at the distance of ten or twelve inches from each other, placing under each as they make it a cocoanut shell, or the spathe of a palm, as a receptacle for the milky sap which begins to flow immediately the incision is made. The sap is collected in bamboos, and boiled in order to drive out the watery particles, and bring it to the proper consistence. Boiling appears necessary when the juice is collected in large quantities; but when a small quantity is allowed to exude from a freshly-wounded tree, and is collected and moulded by the hand, it consolidates perfectly in a few minutes, and has all the appearance of the prepared article.

When quite pure gutta-percha is of a grayish white, but it is generally brought to market of a reddish brown hue. This is ascribed to chips of the bark which fall into the sap, and give it their colour; but in addition to this, other matters, such as saw-dust, are frequently introduced purposely as adulterants.

Dr. Oxly, of Singapore, in an interesting description of this substance, first printed in a Singapore periodical in 1847, states that the tree which yields gutta-percha was formerly very abundant on that island; but already all the large timber has been felled, and few but very small plants are to be found. I mention Dr. Oxly's name because he was amongst the first to discover gutta-percha to be the best and easiest of all applications ever introduced in the management of fractures, combining ease and comfort to the patient, and very much lessening the trouble of the surgeon. He also used it for bougies, capsules, syringes, &c. In order to meet the immense demand, the wholesale destruction of the gutta-percha tree goes on at a most rapid rate, so much so, that if precaution is not exercised, the supply will cease. A writer on this subject observes :—"How much better would it be, therefore, to adopt the method of tapping the tree practised by the Burmese in obtaining the caoutchouc—viz., to make incisions in the bark, placing bamboos to receive the sap, which runs out freely—than to kill the goose in the manner they are doing? True, they would not at first get so much from a single tree, but the ultimate gain would be incalculable, particularly as the tree seems to be one of a slow growth."

With regard to the mode of preparing gutta-percha, the first process is to cut the blocks into slices. This is done by a vertical wheel, on the face of which are fixed three knives or blades; and while this wheel is rotating at a speed of 200 turns per minute, a block of gutta-percha is applied to it, which is speedily cut into thin slices. The slices are thrown into a tank of water, which is heated by steam to such a temperature as to soften the mass. The dirt and heavy impurities fall to the bottom, leaving a pasty mass of gum, and the mass being thrown into another rotating machine, is there so torn and rent, and dragged asunder by jagged teeth, as to be reduced to fragments. The fragments fall into water, upon the surface of which (owing to the small specific gravity of the material) they float, while any remaining dirt or impurity falls to the bottom. These fragments are next converted into a dough-like substance by another softening with hot water, and the dough undergoes a thorough kneading. It is placed in heated hollow iron cylinders, in which revolving drums so completely turn and squeeze and mix the now purified mass, that all parts become alike. The kneaded state may be considered the dividing line between the preparatory processes and those which relate to the fashioning of the material. The soft ductile mass may be formed either into sheets or tubes. In forming sheets the mass is passed between steel rollers, placed at a distance apart corresponding to the thickness of the sheet to be made. Sheets may be made as thin as the finest tissue paper. By the time that the substance has passed through the rollers it has cooled sufficiently to assume a solid, firm consistency. By the adjustment of a few knife edges, the sheet may be cut into bands or strips of any width before leaving the machine. In making tubes and pipes the soft mass of kneaded gutta-percha is passed through heated iron cylinders, when a similar modification of the wire-drawing process reduces it to the desired form and dimensions.

(*To be continued.*)

NOTES ON SURGERY AND PATHOLOGY.

OCULO-DENTAL AFFECTIONS.

Pathological Connexion between the Eye and the Teeth through Reflex Action. DR. ARMAND METRAS. (*Thèse de Doctoral. No.* 72, *Paris*, 1873.)

AFTER a rapid sketch of the anatomy and physiology of the trigeminal nerve, the author commences his subject and divides the ocular affections of dental origin, into three classes:

1. Ocular affections due to vaso-motor disturbances, such as nutritive changes and amaurotic lesions.
2. Those which result from disturbances of sensibility; neuralgia, nervous asthenopia or hyperæsthesia.
3. Those which are characterised by motor disturbances, spasms of the orbital and palpebral muscles, iritic disturbances.

Among the dental affections which can give rise to ocular disturbances we may mention: dental caries, the painful work of dentition, the extraction of the teeth with fracture of the alveolus, and lastly periostitis and gingivitis, caused by artificial pivot teeth, and by artificial dentures.

Above all, lesions of the teeth in the upper jaw, especially of the molars, exercise an injurious influence upon the visual organs.

Oculo-Dental Affections. M. X. Galezowski. *(Journal d'Ophthalmologie.* No. Nov. and Dec., 1872, pp. 606—611.)

It is probable that a certain number of ocular affections arise from diseases of the teeth, or from disturbances in their evolution; it is these affections that the author proposes to call oculo-dental affections. Unfortunately the clinical facts upon which we can depend to describe these lesions are at present restricted, and they are not sufficient to demonstrate anatomically the connection which may exist between the dental nerves and the ophthalmic branch, to prove the existence of oculo-dental affections. As M. Galezowski remarks, all painful affections of the eye carry in their suite neuralgic pains, radiating in the dental branches of the nerves of the upper or lower maxillæ. This is a fact well known, not only to specialists, but to well-informed practitioners. But what is less known is the ocular lesions following dentition, dental caries, or operations on the teeth, such as plugging, cauterisation, or the introduction of artificial teeth. There is certainly here a chapter of pathology generally ignored, which merits the attention of surgeons.

M. Galezowski only deals with, or at least only appears to wish to deal with ocular lesions following dentition or dental caries. According to him the kerato-conjunctival phlyctenulæ so frequent in strumous children, is merely the result of dentition; whence their appearance between the sixth and tenth year. In young children abscess of the cornea can arise from imperfect or difficult dental evolution, and interstitial keratitis occurring at the time of the second dentition is a frequent result of it. Besides keratitis, kerato-conjunctivitis may also be developed later, on the appearance of the wisdom teeth.

Here the work of M. Galezowski finishes; a work to be continued later; the author does not say where.

Salivary Fistulæ of the Parotid and of Steno's Duct. Dr. L. F. Cadot. (*Thèse de Doctoral,* Paris, 1872.)

For the treatment of fistula of Steno's duct, which occurs *in front of the anterior border of the masseter*, the best results are furnished by the operation of Deguise, modified by M. Gosselin. When the fistulous orifice is situated *behind the anterior border of the masseter,* Deguise's operation is still applicable, but with the modification due to M. Trélat, and described in this thesis.

The author thinks that in a case where all other treatment has miscarried, *ligature of Steno's duct,* proposed by Fibarg a long time ago, might be tried. In animals the result is atrophy of the glands, without well-marked inflammatory phenomena. In opposition to this opinion an observation of Barel is cited, published in the *Gazette des Hopitaux*, 1859, which appears to prove that the suppression of the flow of saliva by Steno's duct does not occasion serious conditions in the human subject. Nevertheless, the ligature of this duct has not been yet tried.

(The London Medical Record.)

Von Linhart on the Reduction of Dislocations of the Lower Jaw.—Professor Von Linhart, of Würzburg, writes to the *Pester Medizinisch-Chirurgische Presse* of August 19, 1873, on the advantage, in double dislocation of the lower jaw, of reducing first one side and then the other. A case illustrating the practice is related. The symptoms were the usual ones. The patient was forty-four years old, and had dislocated the jaw several times previously. On this last occasion three attempts were made to reduce the dislocation, the third occupying about two hours, but without result. On admission into the surgical clinique of the Julius Hospital, the injury was found to have subsisted for twenty days. The teeth projected beyond those of the upper jaw; the mouth was half open, and the saliva dribbled from it. There was a marked depression in front of the ear, and a swelling over the upper part of the masseter. There was a certain amount of motion, but not without pain; the speech was imperfect; and the patient was unable to take solid food. Von Linhart seated the patient, who was not narcotised, upon a stool in front of him, and inserted the thumbs, protected by a fold of pocket handkerchief, on the posterior molars in the lower jaw, the fingers resting against the chin. He now pressed the right half of the jaw gently upwards, causing a slight movement in the inverse direction on the left side, when with gentle pressure backwards the left capitulum glided into its socket: the same thing was done upon the other side. Nothing, it is stated, could have been more simple, easy, or painless.

Chisholm on Removal of the Superior Maxilla.—Dr. J. J. Chisholm, in the *New York Medical Record*, says that, having for many years taught and practised Dieffenbach's operation for the removal of the upper jaw as the best method, both as to the ready exposure of the entire bone, and leaving the least deformity as a permanent result, he has been much surprised to find so little mention of this excellent method. Chelius, in his *System of Surgery*, refers to Dieffenbach's method in one line only. In the more recent works of Holmes, Ericheson, Fergusson, Gross, Gant, and others, the operation appears to have been completely lost sight of. Dieffenbach's operation consists in making the incision in the median line of the face, commencing at the root of the nose; a short incision joining the first at right angles, extends from the root of the nose to the inner angle of the eye. The lower lid being drawn downwards, the knife is carried along the entire length of the conjunctival cul-de-sac, separating this lid from its orbital connection, and utilising the entire length of the lower lid in the horizontal flap. When the flap, as defined by the vertical and horizontal incision, is dissected up, it will lay bare the entire front, and if necessary, side of the face, without having divided any large vessel, or any important nerve-branch. With such an exposure, the superior maxillary bone can be isolated with great ease, as every surface of contact with neighbouring bones can be clearly brought into view. With no additional incision, Dr. Chisholm found no difficulty in removing from the living subject the superior maxilla, malar, and palate bones, which enabled him to extirpate a large fibroid, with extensive adhesions to the roof of the pharynx. After the removal of the maxilla, when the flap is brought back to its normal situation, and carefully adjusted by several points of suture, union speedily ensues. This operation leaves so little deformity that, in the majority of cases, the line of incision will escape detection, unless the scar be sought. The inferior lid retains all its movements. The sides of the face present their normal appearances, unscarred, with nerves and vessels intact. The eye-muscles can be so nicely manipulated through this bold flap that all the movements are retained. As the suspensory ligaments of the eyeball remain adherent to the roof and sides of the orbit, there is no drooping of the eyeball. Immediately after the sutures are placed, he has seen the patient move the eyes in parallel axis, showing perfect control.

WILLIAM MACCORMAC.

REMOVAL OF BOTH SUPERIOR MAXILLARY BONES.—The *Centralblatt für die Medicin, Wissenchaft.* for June 21st contains a brief note of a case related by Podraski in the *Asterr. Zeitschr. für prakt. Heilkunde*, No. 1, 1873, in which he removed both upper maxillæ from a man aged forty-two. They were the seat of a tumour which had the appearance of being malignant, being attended with pain and swelling of the lymphatic glands. It was, however, found to be a large ivory exostosis, which had almost obliterated the sinuses and nares. The patient died of pyæmia.

A CHILD DIES BY VOMITING INTO ITS OWN LARYNX.—A little boy, aged one year, was fed in superabundance from a bottle, and put to bed at six p.m. At twelve a.m. it died, under symptoms of the most profound dyspnœa. On section, the two lower lobes of the lungs were found stuffed with a greyish fluid having a strong odour of butter. Altered milk was found in the trachea and bronchi. The milk contained in the stomach must have been vomited, and the child being in a horizontal position, it found its way into the respiratory passages. Dr. Parrot, who narrates the case, considers this accident to be more frequent than is generally believed, on which account he calls to it the attention of fellow-practitioners.—*Rivista Clinica di Bologna*, July 25, 1873.

INFLUENCE OF CHANGES IN BAROMETRIC PRESSURE ON THE PHENOMENA OF LIFE.—When oxygen accumulates to about 30 per cent. in the arterial blood (of a dog) it produces convulsions; and the fall of temperature which occurs indicates a profound change in internal nutrition. It is not that the blood becomes a poisonous substance through superoxidation, but that the excess of oxygen in the tissues themselves alters the chemical phenomena of nutrition. Similarly compressed oxygen hinders the germination of seeds, the putrefaction of fragments of muscle, the change of starch into sugar by saliva, the development of *Mycoderma aceti*, and a number of like phenomena.—M. BERT.

SOLIDIFICATION OF NITROUS OXIDE.—The solidification of this body is readily obtained by passing a rapid current of air across the liquefied gas. Unlike liquefied carbonic acid the protoxide of nitrogen can be kept for a long time in a liquid state in open vessels. The protoxide of nitrogen when liquefied boils at 92°, and solidifies at 99°, so that the tension of its vapour is less than 1 atmosphere. The specific gravity of the liquid protoxide at 0° is 0·9004 ; its coefficient of dilatation is considerable, and it is insoluble in water.—M. T. WILL.

ABSTRACT OF A LECTURE ON TERTIARY SYPHILIS AND SYPHILITIC CACHEXIA,

Delivered at St. Mary's Hospital, July 23rd, 1873, by S. A. LANE, F.R.C.S, Consulting Surgeon to St. Mary's Hospital, and to the London Lock Hospital.

MR. LANE commenced his lecture by stating that both in consultation with other surgeons and at the College examinations he was much struck with the unsettled state of opinion in the diagnosis and treatment of tertiary syphilis. The principal difficulty seemed to be in deciding whether any particular case under notice should be classed with the secondary or tertiary group of symptoms, and, again, whether iodine or mercury should be the remedy to be relied upon. Some, he found, considered it immaterial which of these remedies was administered, while others would prescribe them in combination, or in alternation with each other. He considered it so essential that clear and distinct notions should be held upon these points that he had placed before them two tables in which the tertiary and secondary affections were respectively grouped, and their appropriate remedies mentioned. Each group was also illustrated by numerous drawings taken from patients in the Lock Hospital.

. . . .

There might be, he said, a few exceptions to the strict line drawn in the tables, but the exceptions could be readily understood, and rather tended to prove the rule—for instance, periostitis and nodes would be found in both tables: when of early appearance and associated with secondary affections, mercury should be given; when of late date and co-existing with tertiary affections, then iodine should be the remedy. Tubercular and ecthymatous eruptions would occasionally be found to run into rapid destructive ulceration, and this, again, indicated the supervention of syphilitic cachexia. Again, iritis would be sometimes met with in tertiary syphilis; it would be found, however, that the affection commenced in the sclerotic or fibrous coat, and had extended to the iris. In all these cases the predominant co-existing symptoms would always indicate the constitutional condition of the patient, and the treatment required. The lecturer attributed the unsettled state of opinion of which he complained to the variety of views taken by different authors on syphilitic affections. Some pathologists objected altogether to the division of the symptoms into secondary and tertiary, and held that, as they all were consequent upon the primary infecting chancre, the term secondary should include both groups. Dr. Wilks also objected to this division, and preferred to include all primary and secondary affections under the term syphilis, and all the tertiary of other authors, with the exception of the fibro-plastic deposits, under the title of sequelæ of syphilis. Many practitioners who did admit the classification of the symptoms into secondary and tertiary had, he observed, not made up their minds to which group some of them properly belonged. He thought, however, good practical grounds existed for the divisions explained in the tables and by the accompanying drawings.

With respect to the true nature of syphilitic cachexia, the lecturer confessed that we were still in ignorance. He himself was in favour of considering it a dyscrasis of the blood, and would venture to advance a theory founded upon the well-known views of Liebig with respect to the mode of action of animal poisons on the blood. He compared it to the formation of yeast by fermentation in a saccharine solution to which gluten had been added. So long as any gluten remained, yeast could be formed, but its formation ceased when the gluten was exhausted, and could be renewed only by the addition of more gluten. Syphilisation had taught us that the venereal poison, like that of variola and vaccinia, could not be produced in any individual to an indefinite extent, and that the power of generating it became sooner or later exhausted, when he was said to be syphilised. Applying these data, Mr. Lane explained his theory to be that the act of generating the venereal poison in its primary and secondary states had completely exhausted the blood of one or more of its normal constituents not readily reproduced, and that this deteriorated blood constituted the syphilitic cachexia or tertiary syphilis, the morbid condition under consideration. He also suggested that mercury might possibly prey upon the same unknown constituents of the blood, and thus prove beneficial by taking from the venereal poison that upon which it depended for its formation. This view of the action of mercury would support the very general opinion that tertiary syphilis was the result of the joint action of syphilis and mercury on the system, and would also satisfactorily explain why mercury should not only cease to be beneficial, but should prove to be injurious. Mr. Lane thought that this theory, however imperfect, might serve to account for many of the phenomena observed in tertiary syphilis, such as the inability of patients suffering from this malady to transfer the poison of syphilis to others, also the extreme difficulty of inoculating such persons with the primary venereal poison; and, again, why restorative remedies—iodine, sarsaparilla, steel, and quinine—combined with good living and other stimulants, should be found more beneficial than mercury in the treatment of these cases.

Having explained that his theory would lead him to attribute the debilitated and asthenic condition of the sufferers from tertiary syphilis to the absence of certain unknown constituents of the blood, he proceeded to observe that the principle upon which the treatment should be conducted was to restore these constituents, and that, consequently, all evacuants, and especially preparations of mercury, all debilitating influences, all wear and tear of system, all over-exertion of mind or body in pleasure or business, should be avoided; and that, on the contrary, tonic, stimulant, and restorative measures, combined with good generous diet and judicious hygienic regulations, were the remedies to be depended upon. The medicines which were found of most service were iodine and sarsaparilla; their *modus operandi* was not understood, but they were of far more value than the ordinary tonics—steel, bark, and the various other bitter and astringent remedies. With regard to the salts of iodine, the lecturer's experience led him to say that they were powerfully stimulant, and had even a tendency to produce inflammation. He related a case in proof of this where the iodide of potassium, given in three-grain doses, was followed three successive times by an inflammatory attack, and was obliged to be relinquished in consequence. In reference to the large doses in which this medicine was sometimes given in the present day, he remarked that twenty-five years ago, having heard that some French surgeons administered this remedy in two-drachm doses, he had given it in that quantity thrice daily to one patient in the Lock Hospital for three weeks in succession without noticing any more marked effects, beneficial or otherwise, than from the ordinary five or ten-grain doses. He was convinced, however, that some degree of caution was necessary in administering this remedy in large doses. He had seen one case where a gentleman of his own accord took as much as ninety grains thrice daily for years, and usually with impunity, but in whom the poisonous effects showed themselves from time to time by attacks of hyperæsthesia, and ultimately of temporary paralysis of the lower extremities. Sarsaparilla, he observed, was, in his opinion, greatly undervalued by many surgeons as a remedy in tertiary syphilis. He was old enough to remember, before iodine was introduced, when surgeons were obliged to depend upon this drug alone in the treatment of these cases, and he was glad of this opportunity of expressing his decided opinion of its value. Before the introduction of iodine he had fully tested the powers of sarsaparilla as compared with those of steel, bark, and other tonics, by treating cases in the Lock Hospital, under the same hygienic conditions, alternately by the latter remedies and by sarsaparilla, with the result of convincing him that they possessed little or no efficacy, and that sarsaparilla was the most powerful remedy then known in the treatment of tertiary syphilis.

Mr. Lane, having made these general observations on the subject of treatment, and having laid down the principle upon which it should be conducted, gave the details of the plan he had found most generally useful. It consisted of administering the iodide of potassium in doses of from three to ten grains, taken in the third of a pint of the simple or compound decoction of sarsaparilla as a vehicle, three times daily, alternating with a pill of two grains of quinine and three grains of confection of opium, also taken thrice daily. He had found opium of service not only in allaying pain and irritability, but also in moderating the secretions, and thus preventing unnecessary waste. Exceptional cases might require the iodide to be increased to fifteen or twenty-grain doses. Diarrhœa, which is not unfrequent, must be met by larger doses of opium and the ordinary astringent remedies. The local treatment he considered of secondary importance, and did not feel warranted in occupying their time with it; the general principles of surgery would sufficiently guide them.

After referring to some remarkable cases of disease, Mr. Lane concluded by observing that the task he had set himself was to make clear to his hearers in what class any given case of constitutional syphilis should be grouped, and how it should be treated. If he had at all succeeded in his endeavour, he would have the satisfaction of feeling that their time and his had not been altogether thrown away.

ROYAL COLLEGE OF SURGEONS.

Up to the time of going to press thirty-nine Dental Students have registered at the Royal College of Surgeons. Of this number twenty are new students, entering for the dental diploma only, whilst seven have registered for the Membership of the College in addition to the dental diploma.

REPLANTATION OF TEETH.

By Isidore I. Lyons, M.R.C.S., L.D.S., L.R.C.P. Edin.

[LANCET.]

Replantation of teeth as a useful remedy in dental surgery has never been received with much favour by the dental profession. The results of cases prove, however, that at least there are conditions in which it is of great value.

The art and science of dental surgery has not yet arrived at such a high state of perfection that we have a remedy for every disease to which teeth are liable, unless we consider extraction as one, a remedy too often used, unfortunately.

The principal affections for which extraction is practised are necrosis, acute inflammation of the pulp, acute and chronic periodontitis, exostosis, and caries. Of these necrosis and exostosis are the only diseases for which extraction is almost unavoidable; for the rest, a tooth affected with any one of them may, in the great majority of cases, be saved by appropriate treatment. But in ordinary practice, extraction is the usual remedy adopted. Unfortunately it is generally the wish of the patient, who, perhaps, having already suffered so much pain, prefers the speediest remedy. On referring to the various works on dental surgery, we find that remedies for different diseases of the teeth are so few in number, that he who adds one remedy renders a service to humanity. Such an one is replantation of teeth for acute and chronic periodontitis. This was suggested by Mr. Coleman, after seeing the same remedy succeed for acute inflammation of the pulp of a lower molar tooth, which had resisted every other known kind of treatment.

The principal objection urged against replantation of teeth is, that if a tooth is extracted it must necessarily lose its vitality, and therefore the fangs undergo absorption, so that after a time it becomes useless and must be extracted. Supposing the objection to be valid, as absorption is a long process, sometimes extending over years, it will have been a greater gain for a patient to retain his tooth for an indefinite period than to lose it entirely and at once; but it is no more necessary that a tooth, after undergoing extraction and replantation, should lose its vitality, than for a long bone to do so after fracture, with stripping back of the periosteum. The extraction of a tooth may be divided into two parts—firstly, the laceration of the alveolo-dental membrane or periosteum;

secondly, that of the nerve and blood-vessels supplying the tooth. As regards the former, there is no reason why the alveolo-periosteum should not again unite to the tooth, seeing that if a piece of periosteum be stripped off a bone it will unite again if placed in contact with the bone and left at rest. The union of the divided ends of a nerve is also a recognised fact, but even supposing this latter impossible, the tooth would merely be in the condition of one which has had its pulp destroyed—a common operation in dental surgery.

The manner of performing the operation is as follows :—A tooth which is to be replanted should be carefully extracted, and as little as possible of the surrounding tissues lacerated ; it should then, unless the operation be simply for the destruction of the dental pulp, and where the periosteum is healthy, be immersed in some antiseptic fluid, such as diluted carbolic acid or chloride of zinc (the latter from experience being preferred) ; the socket should then be swabbed out some half-dozen times with a strong solution of the same antiseptic employed. The tooth, if carious, should be plugged and returned to its place. If there is any thickening of periosteum, fibrous growth, sac of abscess, or absorption at the extremity of fang, it should be excised before replantation. Should patient complain of pain arising from the operation, prescribe poppy fomentations, although the pain is rarely more than what is due to the tenderness of parts from the laceration of soft tissues after the extraction of the tooth.

Out of twelve cases that I have operated on within the last four years, nine are successful and three have failed. The failures have but one significance, and that is, teeth to undergo replantation must be selected. In a cachectic patient the chances are against success ; when a tooth has lost the support of its fellows on both sides, it cannot become firm. Nevertheless, the successful cases warrant a further trial of replantation, which would preserve many teeth otherwise sacrificed. The number of my cases during the last four years was twenty-seven, some of which cannot be traced ; the remainder are too recent to be judged. The reason why they are so few arises from the difficulty of inducing patients to believe in such a remedy as replantation.

CARBOLIC ACID AND ITS RELATION TO CREASOTE.

By A. M. Read.

(Chemical News.)

Carbolic acid was discovered in the year 1834, by Runge, who found it to be a constituent of coal-tar oil. Its chemical properties were more thoroughly investigated in the year 1841, by Laurent, who made it from the lighter oils of coal-tar, and who considered it to be an hydrated oxyde of a peculiar compound radical, which he called phenyl, and described it under the name of hydrate of phenyl. It has been variously named by different writers, phenic acid, phenyl alcohol, hydrate of phenyl, coal-tar creasote, carbolic acid, and phenol, the latter of which is the name under which it is generally treated of in text-books, although carbolic acid is and probably ever will be its common name.

Carbolic acid is produced by the action of nitrous acid on aniline, and by the dry distillation of gum benzoin, quinic acid. chromate of pelosina, salicylic acid, coal, and the resin of *Zanthorrhœa hastilis*. It is found in the urine of the horse, cow, and man, and in castor. It is also reported as having been obtained from a plant growing on the high lands of India (the *Andromeda Leschenaultii*), which is said to yield (*a*) a very pure quality, less deliquescent than that made from coal-tar oil, but at a much greater cost. It forms the chief constituent of the acid portion of coal-tar oil, from which it is generally obtained by the process given below.

The coal-tar oil is subject to distillation in a retort furnished with a thermometer, and the portion that passes over between the temperature of 150° and 200° C. (302° and 390° F.), is collected apart. This product is then mixed with a hot strong solution of caustic potash and left to stand, whereby a whitish, somewhat crystalline pasty mass is obtained, which, by the action of water, is resolved into a light oily liquid and a dense alkaline solution. The latter is withdrawn by a syphon, decomposed by hydrochloric acid, and the separated oil purified by contact with calcium chloride, and re-distillation. It is then exposed to a low temperature, and the crystals formed are drained from the mother-liquor and carefully preserved from the air.

Pure carbolic acid forms long colourless prismatic crystals, which melt at 35° C. (95° F.), to an oily liquid, boiling at 180° C. (356° F.), and greatly resembling creasote in many

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(*a*) From its volatile oil, of the composition of oleum gaultheriæ.—*Ed. Am. Journ. Pharm.*

particulars. It is soluble in about 14 parts of water, freely soluble in alcohol, glycerine, ether, and strong acetic acid, and gives no acid reaction to test-paper. It is very deliquescent, absorbing moisture from the atmosphere with avidity and liquefying. It coagulates albumen readily, and is therefore a powerful antiseptic. Sulphur and iodine dissolve in it. Nitric acid, bromine, and chlorine attack it with energy, forming substitution products, all of which are of an acid character. It also forms substitution products with sulphuric acid, and is dissolved by alkalies, forming salts called phenates. It reduces mercuric oxide at the boiling point; separates silver from the nitrate; reduces the peroxide of lead to the protoxide; and upon heating it with arsenic acid forms a yellow substance called xancthophenic acid. One of the most common impurities found in carbolic acid is coal-tar oil. This can easily be detected by mixing the suspected acid with about 20 parts of water, when the acid will be dissolved, leaving the insoluble oil floating on the surface. Pure carbolic acid gives a pure blue colour to pine wood previously treated with hydrochloric acid; a green colour indicates aniline, and a brown pyrrhol. It ought not to turn brown in the air, even in the presence of ammonia; and should give, with sulphate of iron, not a red but a pure lilac colour. When immersed in an aqueous solution of chromic acid it is immediately turned black.

There have been a great many tests given to distinguish creasote from carbolic acid; but none of them have proved satisfactory. I give below some of the principal ones now used for that purpose.

With three or four volumes of a saturated aqueous solution of baryta, carbolic acid forms a clear solution, which, after standing, gives no deposit, or only a slight pulverulent one, while with creasote it forms an incomplete cloudy solution.

With an alcoholic solution of chloride of iron, creasote gives a green colour, carbolic acid a brown; but with an aqueous solution of the same, creasote gives no reaction, while carbolic acid gives a blue colour.

According to Mr. Morson, pure creasote is insoluble in glycerine, while carbonic acid forms with it a perfectly clear solution. As this test has been the subject of some controversy which has attracted considerable attention, I have made a few experiments with it, the results of which I give below.

I first tried the common creasote of commerce with an equal volume of glycerine, and found it to be readily soluble; Merck's gave the same result, but Morson's refused to dissolve in glycerine, sp. gr. 1·253, even after three or four volumes had been added.

I then carefully added carbolic acid to a mixture of Morson's creasote and glycerine, and found that upon the addition of 23 per cent. of Calvert's No. 2 acid the creasote became soluble, forming a perfectly clear solution with the glycerine.

Upon the addition of water to the three solutions of creasote, they each became cloudy, and the creasote soon separated; while upon a solution of carbolic acid in glycerine, water had no effect whatever.

Some time ago, while preparing a catarrh mixture in which carbolic acid is used in conjunction with liquor ammoniæ fortior, alcohol, and water, I found that upon the addition of the ammonia to the acid, the acid was readily dissolved, forming a clear solution, which did not change upon the addition of the other ingredients; but which, after standing a few hours, became a beautiful violet blue colour. Having been taught by text-books that carbolic acid was insoluble in ammonia, I was somewhat surprised at this result, and upon referring to Watts, Gmelin, and other authorities, and finding that they made the same statement (*a*), my surprise was somewhat intensified. I immediately instituted a series of experiments, and found that carbolic acid was certainly soluble in ammonia, but whether owing to impurities present I could not say. I used Calvert's No. 2 acid, which was immediately dissolved by the ammonia, forming a clear solution, which, upon standing about six hours, gave the violet blue colour spoken of above, the acid still remaining in solution, and giving no precipitate.

I then tried the ammonia upon common creasote, which I found to be insoluble in it, but which, after a short time, acquired a light blue colour.

To carry these experiments to a successful issue, it became

(*a*) *Note by the Editor of Am. Journ. Pharm.*—Gmelin's "Hand-book," edition of Cavendish Society, vol. xi., p. 150, contains the following:—

Carbolate of Ammonia.—Carbolic acid absorbs ammoniacal gas abundantly and with evolution of heat, forming carbolate of ammonia (Laurent, Hofmann, *Ann. Pharm.*, 47, 75). This salt, passed in the state of vapour through a glass tube at a low red heat, deposits a small quantity of charcoal, but does not form any aniline; which, however, is formed at 300° C. in sealed tubes, and sparingly when an alcoholic solution of carbolate of ammonia is set aside for a month (Laurent). Strong ammonia dissolves quickly in coal creasote, and the mixture turns red when exposed to the air (Reichenbach). The salt obtained with carbolic acid remains colourless, and even when it contains but little ammonia, exhibits alkaline reaction, exhales ammonia, and volatilises (Runge). Creasote dissolves in ammonia, even in the cold; and the solution gives off all its ammonia at 100° (Gorup-Besanez).

necessary to procure chemically pure carbolic acid and creasote. After a number of attempts I succeeded in getting Morson's and Merck's creasote, and having in the meantime found in the *Druggists' Circular* a process for purifying carbolic acid, which, with some modifications, I have used, I have succeeded, I think, in confirming my first experiments.

I will give the process of purification as used by myself.

I put into a pint flask 1 oz. of Calvert's No. 1 acid, crystallised, and gradually added 10 ozs. of distilled water, shaking it frequently, when I found that 6½ drachms of the acid were dissolved, leaving 1½ drachms undissolved to contain the impurities, which are less soluble than the acid. As soon as the solution became clear I carefully poured it off, placed it in a hydrometer glass, and added, with constant agitation, finely powdered salt (previously purified by dissolving it in water, filtering the solution, and evaporating to dryness), until the water was saturated, and the acid arose to the top. I then carefully removed the acid with a pipette. Upon the addition of ammonia to this product it was very readily dissolved; but it did not give the violet-blue colour until after standing about twelve hours. Not being satisfied, I re-purified it in the same way, being careful not to add as much water as I did at first.

The addition of an equal volume of ammonia to this product of re-purification quickly dissolved it, forming a perfectly clear solution, which did not acquire the violet-blue colour until standing nearly thirty hours.

For want of time I was not able to carry the purification by fractional distillation as I should like to have done; still I consider the product of re-purification very nearly pure —much purer, at least, than any I could find in the market.

Upon the addition of ammonia to this acid, as stated above, it was readily dissolved; while upon Morson's creasote, ammonia had no effect whatever, neither dissolving it nor giving it the blue colour that it gave to the common creasote. Merck's creasote gave the same result; as well as other samples that I have tried being perfectly insoluble in ammonia.

The ammonia used in the experiments given above was the aqua ammoniæ fortior of the U. S. P., sp. gr. 0·900. The aqua ammoniæ U. S. P., sp. gr. 0·960, would answer the same purpose, but a much larger proportion would be required.

After the successful termination of the experiments given above, I have no hesitation in suggesting aqua ammoniæ fortior as a test to distinguish between carbolic acid and creasote; and of leaving its value as compared to other tests now known to the judgment of the pharmacist and chemist.

SOME OBSERVATIONS ON THE USE OF PHOSPHORUS IN NEURALGIA.

(Illustrated with Eighteen Cases.)

By J. Ashburton Thompson, Fellow of the Royal Obstetrical Society, Surgeon-Accoucheur to the Royal Maternity Charity, &c.

(The Practitioner.)

The great difficulty in administering pure phosphorus in a reasonably palatable form, together with some doubt as to the kind of case likely to be benefited by it, and perhaps some apprehension of the effect of so powerful a poison, even in minute doses, may be among the reasons which have prevented the more frequent use of a medicine capable of sustaining comparison with the most active remedial agents with which we are acquainted.

So long ago as 1863 Dr. C. B. Radcliffe [*] published an account of four cases successfully treated with the hypophosphite of soda.[†] Two of them are cases of sick, or neuralgic, headache—migraine; one of trigeminal, and one of sciatic, neuralgia.

In 1868 M. Dujardin Beaumetz published the results of some investigations conducted by him in that year. These relate rather to the mode of administration than to the therapeutic action of the remedy, and accordingly will be found in brief under the former head.

Dr. Chapman,[‡] in his recent work, says: "Phosphorus is in my opinion more likely to intensify than to palliate neuralgia:" and he then quotes Dr. Anstie.[§] This author, after trial made with various preparations of phosphorus, concludes that "its utility is not very extensive or reliable; and perhaps this opinion of the doubtful efficacy of a very disagreeable drug may also have militated against its further trial, emanating from such an authority.

In 1872 attention was re-aroused to its powers by a letter from Mr. G. M. Bradley to the *British Medical Journal* for October 26, in which he relates a cure with small doses of phosphorus, which had obstinately resisted every other reputed remedy. More recently still Dr. Broadbent [||] related three cures of nervous disorder treated successfully with this remedy; one only, however, of these was a case of nerve-pain.

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[*] Radcliffe, *British Medical Journal*, November 7, 1863, p. 489.

[†] For remarks on this substance *vide infra.*

[‡] Chapman, "Neuralgia and Kindred Diseases." 8vo., 1873, p. 267.

[§] Anstie, "Neuralgia." London, 1871, p. 180.

[||] Broadbent, *Practitioner*, April, 1873.

In the middle of January of this year I put the first of the reported cases under treatment. The other seventeen followed consecutively upon it in my practice, and were noted as they arose; but they are not here set forth in that order, on account of the convenience which their classification presents in this mode of publication. The following remarks bear exclusively upon cases of nerve-pain, and these have been carefully differentiated from similar diseases. They are arranged in three classes, which are named respectively Acute Primary attacks, Acute Recurrent attacks, and Chronic cases. Of the first class there are only six cases, but it is almost characteristic of neuralgia to recur, and it will be interesting to note whether some of the rapidly-cured primary cases are liable to anything like an early return of the disease. The third division of six chronic cases does not present such perfect results as the two former classes; still, if it be remembered in considering them that two were complicated with phthisis—one being advanced in that disease—while a third was already reduced to a dangerous condition of debility before coming under treatment, I think it will be readily allowed that the result is on the whole eminently satisfactory. In the Tables setting out these cases the conditions and events of them are classified under headings which speak for themselves. Under "Complication," if debility or anæmia be inserted, it has been of a very marked kind. Occasionally the time occupied by the cure seems disproportionate to the duration of the disease; but I would now observe, what will be found repeated hereafter, that in all cases ultimately benefited relief followed the first few doses, although the cure could not fairly be considered complete until all soreness or numbness—all symptoms of disturbed sensation—had been removed. The figures and letters, F. 1, F. 2, refer to the formulæ which are given below in that part of these observations which bears upon the best mode of administering the remedy, and the experience gained in the trial of various prescriptions. If the remarks upon these points appear rather long, I trust that the fact that they are for the most part original, and, as far as I have been able to ascertain, now for the first time collected and published together, will be a sufficient excuse. Only those who have tried to administer the oily mixture know the disgust with which it is regarded, and the impossibility of persuading patients to persevere with it. On this, for instance, the watery solution is a great advance; and I am not aware of any hitherto published directions for its use.

(To be continued.)

REPORTS OF MEETINGS.

AMERICAN DENTAL ASSOCIATION.

By request of the American Dental Association Dr. Eastlake gave a brief history of the status of dentistry in China and Japan. The speaker said: You cannot expect me to give you a very favourable report of the status of the Profession in this hot-bed of superstition, or that I can give you anything new, isolated as I have been for twenty years. I arrived in Hong Kong in 1853. I found dentistry at a very low ebb. The inhabitants, a superstitious people, educated to believe in charms and necromancy, did not appreciate dentistry. Since I first landed there has been a great change in the character of the inhabitants—brought about mainly by the English with whom they have had intercourse. It would be difficult to find a country where dentistry is more appreciated than it is in Hong Kong at the present day. I have had as patients, representatives of all the Eastern nations. I have had the same difficulties to overcome that you have in the treatment of diseased teeth. The Chinese dentists are a set of charlatans, jugglers, and mountebanks, who work upon the credulity of the people, extract teeth without pain, and perform instantaneous cures through the aid of necromancy. I was dependent upon my own resources—made my own instruments and outfit. To give an idea of the Chinese dentist, I will relate an incident. Some of my patients desired to know how it was that the native dentists were able to extract teeth without pain, and how they removed the worm from the tooth which they were taught to believe was the source of pain. That I might be able to answer some of these questions, I visited a dentist. I found him in his tent, or under his umbrella, in front of the temple of horrors. Around him were a throng of natives afflicted with all manner of diseases. The dentist received me kindly, exhibited his instruments, and showed me his method of operating. By close observation I learned many of his tricks. When a patient presented himself to have a tooth extracted, the dentist placed around the tooth upon the gum a white powder, which he said was the extract of the blood of the horse. The patient then left to return again in a few days to have the tooth removed. When he returns, the tooth being loose, is readily removed without force or pain. The powder used was arsenic. To learn the maggot or worm trick, I was compelled to take one of his instruments for removing the worm. It resembled a pair of forceps. I found one side of the instrument to be of bamboo, which was hollow; in the hollow were secreted the maggots. The dentist would examine the aching tooth, and pronounce it a case of worm in the tooth. Taking his magic instrument he would apply it to the tooth, at the same time forcing one of the maggots out of the bamboo side into the cavity. The patient would then be exhibited to prove the correctness of his diagnosis. Another application of the instrument and the worm was removed and the patient sent away cured. Those engaged in the manufacture of artificial teeth are very dexterous in carving. Their shops are located along the streets, where they are at all times prepared to insert one or more teeth at short notice and for a small fee. The patient is placed on a table and a piece of ivory or hippopotamus tusk is selected and carved to fit the space, and to resemble a tooth; it is then attached to the natural teeth by means of copper wire. I have seen specimens of this work which had been worn for years. A man in Yeddo carves plates for sets of teeth from a hard wood, resembling mahogany; human teeth are then attached to these plates by means of rivets. Colleges and schools are to be found all over Japan. The teeth of the Japanese are of a superior character—much finer than our own. The better class are very cleanly—to keep their teeth clean is part of their religious duty. They perform this duty every morning and night, before going to prayers. They first clean their tongue, then their teeth, and then say their prayers. To clean the teeth they use a piece of wood with a powder made from the cuttle fish. Caries is not common except among the coolies.

Dental Chemistry.—Dr. Webb read a report on this branch, mainly devoted to the physiological action of anæsthetics. It was a good paper, and we regret that we cannot give our readers a synopsis of the writer's views.

Dr. Atkinson, referring to the paper, said: The deprivation of oxygen is the cause of anæsthesia. Functional action does not take place in statical tissue. I wish some one would speak on the subject of chemistry directly, we should then have something on crystallography; something upon which we might learn a thing or two of calcification and absorption of the teeth.

Dr. Buckingham.—That all anæsthesia is the result of the want of oxygen is an old theory. If it were true, then we might give hydrogen, nitrogen, or any other gas which has no oxygen. I think anæsthetics act by being passed through the blood and being absorbed, and so act upon some of the functions of the body as to deprive them of the power to act. I know not how.

Dr. Webb was asked by Dr. Atkinson if he understood him to say that the blood corpuscles have a sac; if so, he would advise him to investigate the matter for himself, and not to take the say-so of others. He doubted it.

Dr. Atkinson was asked, if his theory be the correct one, how he would account for the anæsthetic effect of mesmerism. In reply, Dr. A. said, "mesmerism affords the best evidence that can be adduced in support of his theory. In the mesmeric act the mind must be kept fixed and at rest; respiration *(sic)* and inspiration are gradually arrested and a general cessation of feeling and sense ensues. Awaken the mind, restore the function of respiration *(sic)* and inspiration, and general restoration soon takes place. Mrs. A—— had the power for three days, and everything that could be done was done by physicians to awaken her, but without avail. A brother in the Church suggested that they give her a song of Zion; it was tried, and sister A—— was alive in no time."

The following resolutions, offered by Dr. Rehwinkle, were adopted:— . . . .

Resolved: That in view of the fact that an urgent necessity does exist to supply the army and navy of the United States with competent dental surgeons, it is hereby proposed that a committee of three be appointed to secure the co-operation of the Surgeon-General of the United States army, and if needful of the Congress of the United States, to make provisions for the appointment of dental surgeons to both army and navy.

CALIFORNIA STATE DENTAL ASSOCIATION.

On the report of the testimonial committee being received, a gold medal was exhibited to the society, bearing the following inscription:—"Presented to S. C. Barnum, D.D.S., by the California State Dental Association, as a mark of esteem for the liberal contribution of his great invention, the rubber-dam, May 22, 1873."

The medal is of solid gold, about three inches in diameter. A wreath of laurel leaves of differently coloured gold surrounds it, and the whole is surmounted by a grizzly bear. The pin is composed of nine different varieties of quartz. On the reverse of the inscription is the monogram, "S. C. B.," in which are set forty-eight diamonds. The medal weighs six ounces, and the exact cost, as stated by the president, was $412.

It was resolved that an assessment of $10 be levied upon each member, in order to pay for the testimonial. $325 was then collected, when it was resolved that the motion levying the assessment should be withdrawn.

BRITISH MEDICAL ASSOCIATION.

Held at King's College, August, 1873.

ANNUAL MUSEUM.

Amongst objects of interest to Dental Surgeons the following may be noticed :—

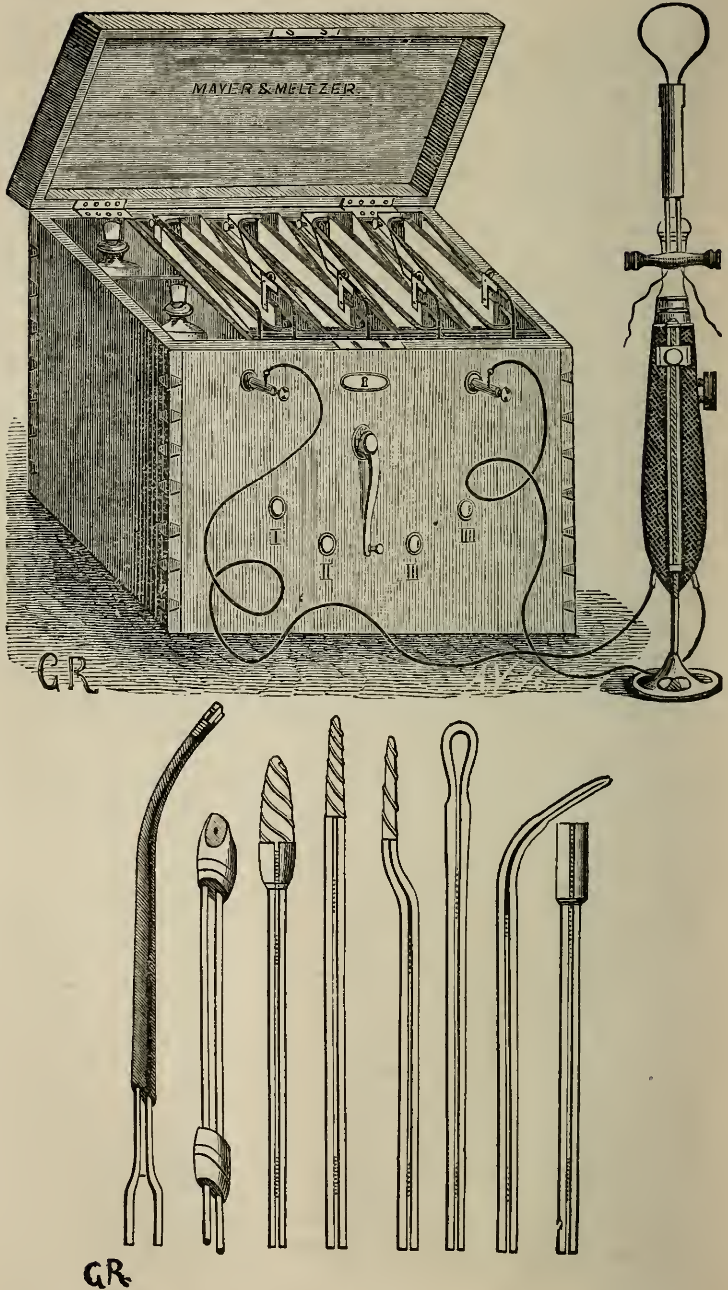
310. Drawing]. *Canine Tooth* removed from the interior of a cyst in the upper jaw of Sarah D., aged 13. It was growing from the floor of the cyst upwards and inwards. It was removed on January 30th, 1872, through an opening made beneath the cheek, and a good recovery followed. (Mr. Bryant.)

311. Drawings]. *Dentigerous Osseous Tumour of the Upper Jaw* removed from Susan S., aged 8, on January 10th, 1871. The bulk of the tumour was composed of bone with cysts ; in the upper part, growing from the orbital plate downwards, the surviving canine tooth was found. The case did well. (Mr. Bryant.)

312. Drawings]. *Periosteal Sarcoma* involving the right half of the lower jaw of six months' growth. It was removed on December 31st, 1872, from Miss L., aged 20. A good recovery followed. (Mr. Bryant.)

313]. *Osteo-Sarcoma* of the right half of the lower jaw removed on May 2nd, 1873, from George S., aged 25. It had been growing for six or seven years. A good recovery followed the operation. (Mr. Bryant.)

53]. *Mayer and Meltzer's Galvanic Apparatus.* Until lately all aqparatus for galvanic cautery were very heavy and cumbersome, and attended with considerable difficulty in charging, as well as discomfort to the persons employing it, in consequence of the profuse fumes given off from the nitric acid. There was also constant danger of breakage of the wires, and great uncertainty in regulating the heat, a matter of the greatest importance, as any degree of heat above a certain standard is attended by the danger of hæmorrhage, while below it, it is inert or nearly so. This instrument combines lightness and portability, with great power, and a means of adjustment without breaking contact, which brings it entirely within the control of the operators, while at the same time all the disagreeable effects of charging,



APPARATUS FOR MAYER AND MELTZER'S GALVANIC CAUTERY

&c., are obviated. The size is 14 inches in length, height, when closed, 9 inches, depth 7 inches. This embraces not only the full battery, but two well-stoppered bottles for the acids required in charging. A lever with dial plate in front of box unites the elements for quantity without breaking the circuit, while the elements themselves, being zinc and carbon, are calculated to expose a large surface to the action of the acid with less destruction of acid and material, and consequently with greater economy than in outer battery composed of platinum elements. In action the box is closed, and presents no unpleasant appearance in the sick chamber.

The instruments, including ecraseur, cutting loops, and porcelain cauteries, are fitted to one handle, and are otherwise the same as those employed by Middledorf's. *Vide* plate.

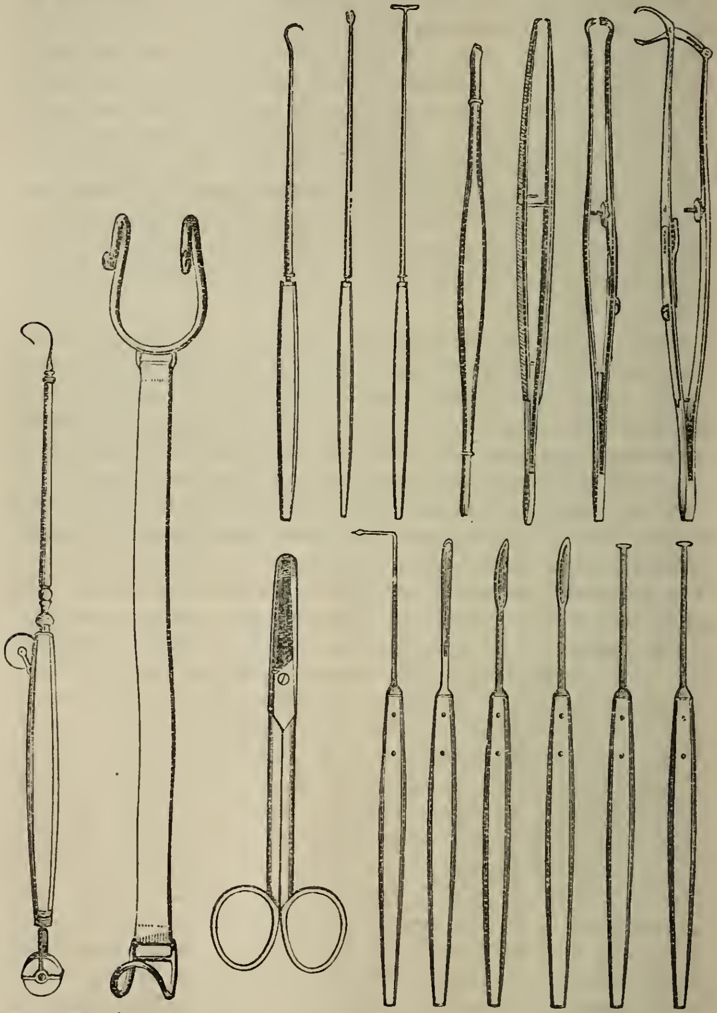
The battery is charged with 1 in 8 of sulphuric acid and pure nitric acid.

220]. *Mr. Clover's Diluting Aspirator,* a substitute for sponges for drawing off blood during certain surgical operations. The instrument consists of an india-rubber tube half an inch in diameter and about five feet long, which conveys water to a tube of vulcanite or metal five inches long. Inside the vulcanite tube is another of the same material, but small enough to allow water to pass between them, and this smaller tube is joined to an indian-rubber tube of the same size which runs back inside the larger tube for two feet, and then perforates it, and is continued for four or five feet. The larger tube is to be connected by a stop-cock with a reservoir of water placed at least a foot higher than the part to be operated on. The smaller tube leads down to a pail or large basin placed on the floor. When the stop-cock is opened the water runs down the larger tube to the end of the vulcanite tube; it there enters the distal end of the small tube, and through it passes down to the vessel on the floor. The supply of water being less than the inner tube is capable of carrying off, it takes with it a series of bubbles of air making a sucking sound; but if the distal end of the tube be placed in water or in a pool of blood it will draw off the liquid. If the inner tube is made to project a quarter of an inch, and a flat piece of sponge is tied over them, the sponge is kept constantly damp and ready to absorb. The blood taken up by the sponge is continually washed out and drawn off by the current of water flowing through the sponge. (Mayer and Meltzer.)

448]. *Various Gags* for operation on the palate, fauces, and pharynx. (Mr. Thomas Smith.)

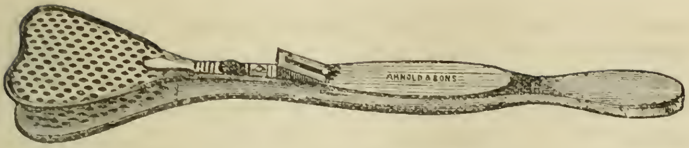
449]. *Strong Gag* for operation on the tongue. (Mr. Thomas Smith.)

450]. *Modification of Matthieu's Suture Needle,* for the palate, for vesico-vaginal fistula, and recto-vaginal fistula.



MR. SMITH'S INSTRUMENTS FOR OPERATIONS ON THE PALATE.

451]. *Suture Catcher,* for discharging sutures from the eye of a needle. (Mr. Thomas Smith.)



DR. DOBELL'S TONGUE HOLDER.
(Arnold and Sons.)

NEW INVENTIONS.

CLAUDIUS ASH AND SONS' NEW GOLD PELLETS.

We are glad an English firm has had the enterprise to enter into competition with the American market in the preparation of the more unusual forms of gold foil.

Messrs. Ash and Sons' pellets have yielded in our hands very satisfactory results, and may be used with confidence by the profession in this country and abroad. Used cold they require heavy pressure to obtain adhesion. After being passed through the spirit lamp flame, they at once become "tacky," and, applied to each other, unite with as little force as that required for Pack's or Williams' pellets.

With regard to substance, they are more dense than the pellets of the makers last mentioned, and yield very good solid plugs.

Being manufactured in this country, there is the obvious advantage of "freshness" in their favour.

NEW FRENCH DENTAL RUBBERS.

We have received from Messrs. Jamieson, of Broad Street and Glasgow, specimens of the new dental rubbers prepared by Turpin, of Paris. They can all be perfectly vulcanised in sixty minutes at 320 degrees, and then give a rubber of very good texture, capable of a high polish, and with an excellent colour; the pink, white, and black rubbers are very satisfactory in respect to colour. How they will wear in the mouth time and extended experience alone can show.

THE LATEST NOVELTIES.

(The Missouri Dental Journal.)

To see all the latest novelties in the way of dental appliances and instruments one should attend the annual meeting of the American Dental Association. Here the dental manufacturers vie with each other in the display of fine instruments, fine dental goods, and the latest novelties. The inventive genius of the profession is here proud to show his last baby. During the past year many very useful improvements in dental appliances have been introduced, most of which were on exhibition at Put-in Bay. As a matter of interest to our readers, we take pleasure in noticing what we saw there. Messrs. Johnston Brothers, of New York, made quite a display of their specialties—dental chair, burring engine and liquid gas apparatus. The long talked of Morrison chair, a description of which appeared in the journal of last year, has at last been put in the market by the Messrs. Johnston. The one on exhibition at their rooms was much admired. A prominent feature in their exhibition was the Morrison engine, run by steam, with its improvements and new appliances adapted for the use of it. New forms of burs, corundum and wood disks for dressing off and polishing the proximal surfaces of teeth and fillings. Corundum and Hindoostan stone points of a variety of forms, for dressing off crown fillings. As a special novelty the engine on exhibition and a dental lathe were run by a small oscillating steam engine. A novelty in the way of liquid gas apparatus was one containing 1,000 gallons. This we consider a great improvement over the smaller ones for office use. Attached to this was an English mouth-piece, which is very complete. Morrison's latest, by the Johnstons, a dental bracket, is very unique, and will be a favourite, especially if low base chairs are to be used.

Delos Palmer's improved rubber dam clamps, with Royce's rubber dam clamp forceps. These clamps are the Allen clamp slightly improved. It is claimed by some that the credit of this invention rightly belongs to Dr. Palmer—not to Dr. Allen. Of this we know nothing. In June, 1870, Mr. Spackler, of this city, made this clamp and forceps from patterns furnished by us. We, however, lay no claim to the invention, as we never introduced them except in our State Association. We look upon them as the most practical of any appliance that has been suggested for the purpose.

RECENT AMERICAN AND FOREIGN DENTAL PATENTS.

(The Dental Advertiser.)

137,434—April 1, 1873.—Diamond Pointed Drill for Dental Use.—James P. Gillespie, Louisville, Kentucky.

By using a diamond point in place of a steel cutting instrument, the shank just below the head can be made of soft or spring temper. If the cutter is of steel the shank near it must unavoidably be of hard steel, while the diamond head is of soft untempered metal. This drill can therefore be used while the diamond head is turned slightly from the axis of the drill, and yet not be broken off.

Claim.—A dentist's drill, formed of a light tempered steel or equivalent shank. A, with a head C, and a diamond point B, substantially as and for the purposes herein set forth.

137,747—April 8, 1873.—PREPARING GOLD FOR DENTISTS. —Richard S. Williams, New York, N. Y.

Two or more sheets of plain foil with an outer sheet of frosted gold are rolled into a cylinder over a mandrel, and the lapping edge of foil caused to adhere by passing it over the flame of an alcohol lamp. The frosted gold, by its greater stiffness, will prevent the several folds forming the coil from adhering.

Claim.—1. Gold for dentists' use, consisting of sections cut from rolls composed of plain frosted gold foil, when the ends of such sections are not compressed or consolidated, as herein shown and described.

2. Rolls of gold for dentist's use, composed of sheets of plain and frosted gold foil, as described, with the edge connected, as specified, so as to adhere to the gold and prevent it from unrolling.

137,589—April 8, 1873.—DENTIST'S FLASK.—Clemon Bailey, Kingston, N. C.

A semi-elliptic spring is arranged upon the top of the flask, and connected by suitable rods with a bar across the bottom in such a manner as to hold the parts of the flask firmly together while in the vulcanizer.

Claim.—The curved spring C, hook rods *ff*, and rod *g*, combined with flask, as described, and for the purpose set forth.

138,150—April 22, 1873.—DENTISTS' TOOL.—Charles P. Grout, New York, N. Y.

The tool is held in its socket by means of a spring which works in a rounded cavity in the shank. A simple pull releases the tool, which when fastened, is prevented from rotating. This fastening is intended for drills, rotated by a dental engine.

Claim.—The tubular slotted handle A, combined with the spring D, which is rigidly fastened to it, and which is provided with the projection *b* for locking the notched tool-shank B, and for allowing the release of said shank by a simple pull, substantially as specified.

138,318—April 29, 1873.—DENTAL ENGINE—Charles M. Curtis, Philadelphia, Pa.

The treadle which communicates motion to a flexible power-conveyor passes through the standard so that the pitman is upon the side away from the operator's knee. A friction-wheel is pressed down by a spring against the periphery of the treadle-wheel. The shaft is coupled together by universal joints, which pass through sleeves. The sleeves are pivoted together by projecting arms, and one set of arms or branches extends below the pivot-arm, and is secured to springs, which tend to throw the two shafts into a line with each other. A rigid bracket holds the end of the flexible shaft, so that it turns upon itself at nearly a right angle, and a flat steel spring holds the jointed portions of the power-conveyer in a horizontal position. The tool is released by forcing down a spring through an opening in a socket.

Claim.—1. The arrangement of the treadle plate and pitman on opposite sides of the standard. Said pitman and plate being connected by an arm of the latter intersecting the standard, substantially as described.

2. The combination of the wheel H, bearing B, shaft K, and spring I, substantially as set forth.

3. The combination of the shaft K, slotted sleeve coupling k, and pin k', as shown and described.

4. The combination of the coupling M N, with the staff L or the extensions thereof, the branches being attached to said staff I, or to a collar or sleeve by suitable spring P P, as set forth.

5. In combination with the shaft K, the curved arm S, bent spring U, and short shaft T, as set forth.

6. In combination with the rotating shaft of the hand-piece of a dental burring engine, the sleeve e^3 and burr or tool b, lever g, pin g', and spring c, said sleeve being provided with an opening e^2, for obtaining access to the spring c and the burr or tool having one or more bevels at its shank end, as specified.

138,370—April 29, 1873.—CLAMP FOR DENTAL PURPOSES.—Charles E. Blake, San Francisco, Cal.

A spring metal clamp of the general shape of the letter U, has its serrated jaws formed to fit the sides of the teeth and hold thereon the "rubber dam." This clamp is furnished at one side with an orifice, through which the filling may be inserted in the side of the tooth, and also with a similarly perforated arm, which adjusts on the main clamp by a slot and set screw.

Claim.—1. A rubber-dam clamp, provided with serrated jaws, adapted to grasp the tooth, substantially as described.

2. The construction of the lamp A, with the adjustable compress a, as described.

3. The clamp B, having one end enlarged and perforated, substantially as and for the purpose described.

139,012—May 20, 1873.—PORCELAIN BLOCK FOR DENTAL FILLING.—Charles H. Mack, New York, N. Y.

A small plate of porcelain is cemented into the cavity of a tooth after it has been nearly filled with gold. Thus a grinding surface of porcelain is furnished instead of one of gold, and the filled tooth is, to all appearances, an ordinary sound one.

Claim.—Porcelain blocks for dental fillings, when made and used in the manner described.

DENTAL HOSPITAL OF LONDON BUILDING FUND.

THIRD LIST OF SUBSCRIPTIONS.

	£	s.	d.
Amount already acknowledged	2,435	18	0
Deacon, J. D., Esq., Putney Heath (per E. Saunders, Esq.)	21	0	0
Savory, Charles, Esq., Lancaster Gate do. do. ...	5	5	0
O'Duffy, J., Esq., Dublin (in five payments)	5	0	0
Twining, S. H., Esq., Strand (per E. Saunders, Esq.) ...	5	0	0
Skirrow, C. F., Esq., Surrey Gardens do. do. ...	3	3	0
Oliver, J. C., Esq., Cardiff ... do. do. ...	2	2	0
Llanover, Right Hon. Lady ... do. do. ...	1	0	0
Williams, Robert, Esq. ... do. do. ...	10	10	0
Bingley, C. B., Esq. ... ... do. do. ...	5	5	0
Pedley, George, Esq., High Street, Borough	5	0	0
	£2,499	3	0

CORRESPONDENCE.

PRELIMINARY EXAMINATION IN ARTS FOR DENTAL STUDENTS.

To the Editor of the MONTHLY REVIEW OF DENTAL SURGERY.

SIR,—I read with much pleasure your excellent article on "The Preliminary Examination in Arts for Dental Students" which appeared in the July number of your journal, and was glad to see that the subject was again taken up by Mr. W. Merson in the September issue, feeling, as I do, that were this comparatively simple test of a schoolboy's knowledge applied to dental as well as to medical and surgical students, it would be a great step gained in the onward progress of our profession, and an inestimable boon to those who are about to enter its ranks.

The knowledge required by the College of Surgeons is no more than ought to be possessed by any properly educated boy upon leaving school, provided that his efforts have been concentrated to the necessary subjects for perhaps a year previously; if, however, his profession is not decided upon until after this, the finishing touches may be easily put to his education during the time which he spends at mechanical work before entering upon hospital duties. In this way many spare hours might be profitably filled up. I may here say that in passing this examination the student learns "the art of answering questions," one of the most difficult, although apparently one of the most simple matters, but one which, now that written papers are set at the L.D.S. examination, is of the utmost importance to dental students. As a student, I cannot discuss whether or not it is advisable that every dentist should obtain the surgical as well as his own special diploma, but I think I am not far wrong in stating that a man who has honestly passed through the curriculum required for the L.D.S. must have obtained a thorough and sound dental education, but that at the same time it is a very desirable thing to obtain the degree of M.R.C.S. in addition, if possible. If, then, the preliminary examination were made compulsory for dental students, what more easy for a man than to spend another couple of years in obtaining the additional qualification if he wished so to do, whereas now even a qualified dentist wishing to become a member of the College must first get through his preliminary, and then allow a period of four years to pass over before presenting himself at the College, as the four years required for the membership must date from the passing of the preliminary.

This brings me to another point, namely, that if a similar rule be applied to dental students no pupil need be allowed to join the dental hospital until he has passed his preliminary examination, which regulation would effectually keep the institution free of those who enter its lists professing that they intend taking the diploma, but who leave in a few months, advertising themselves as its pupils, and disgracing that profession of which, unfortunately, they may legally call themselves members. In this would preliminary education prove a boon to young practitioners. Writing from a student's point of view, I can only urge those who intend joining the dental profession to endeavour while they can to present themselves at one or other of the matriculation examinations, or it may prove a source of regret a year or so hence, when classical and mathematical lore has become rusted with age. Hoping that more able pens will take up this interesting subject, I beg to subscribe myself, yours faithfully,

9 Portland Place, W. DAVID HEPBURN.

[In reference to the employment of galvanism for the treatment of neuralgia of the fifth pair of nerves, it should be borne in mind that the cell power must be lower than may be used for sciatica, and even when employed in moderation caution must be exercised lest permanent injury should be done to the retina or the deep-seated organs. According to Dr. Anstie ("Neuralgia and the Diseases that Resemble it." Macmillan, 1871), "The retina has been permanently paralysed by too strong a current applied on the face, and still graver dangers attend the incautious use of galvanisation of the brain or of the sympathetic."—EDITOR M. R. D. S.]

CHARING CROSS HOSPITAL MEDICAL SCHOOL.

To the Editor of the MONTHLY REVIEW OF DENTAL SURGERY.

SIR,—I am instructed by the Dean to point out to you an error in the *Monthly Review of Dental Surgery.*

The composition fee for Dental Surgery is £42 2s., and not £49 7s., as you announce. Also that the practice of the dental department of this Hospital is recognised by the Royal College of Surgeons. Will you kindly rectify this mistake.

Your obedient servant, W. P. BLANCHARD,

London, Sept. 23, 1873. Librarian.

To Correspondents.

ALL communications intended for the Editor should be addressed to the care of Messrs. SMITH, ELDER, & Co., 15 Waterloo Place, Pall Mall.

All inquiries respecting Advertisements and Subscriptions should be sent to GEORGE BUTCHER, 4, Crane Court, Fleet Street, E.C.

THE MONTHLY REVIEW
OF
DENTAL SURGERY.

No. VI. NOVEMBER, 1873. Vol. II.

THE ABUSE OF CHARITY.

With the commencement of winter we may expect an increased number of applicants for relief at our Dental Hospitals. It is therefore an opportune moment for reminding the officials of those institutions of the danger of increasing the numbers of patients treated, without adding to the amount of good done. Amongst the patients who attend the Dental Hospitals, there is a tendency towards improvement in class that is unmistakable. A large proportion consist of well-dressed and well-nourished people, and not of those whom we know and recognise as the necessitous poor.

Shopkeepers' assistants, skilled artisans or their wives, and domestic servants are not—in the present day, at any rate—fit and proper subjects for public charity. Gratuitous help to such as these is mischievous in its tendency, tending as it does towards the pauperisation of those who should be self-supporting; it is equally injurious to the future well-being of our public institutions; and lastly, it is unjust towards those practitioners who are ready to work, and work honourably, for small fees, and as matters stand at present see the "hope of their calling" drifting away to one or other of our Dental Hospitals.

Nor are the students at these institutions, themselves uninterested in this question. It is certain that they cannot all hope to occupy positions where they can command the highest fees; it is inevitable that a certain proportion of the large number now pursuing their studies, must supply the want which always exists, of sound practitioners who will be prepared to accept a moderate remuneration for their services; and it is this class that is peculiarly liable to suffer by the indiscriminate administration of charity.

We shall take an early opportunity of returning to the discussion of this subject, and endeavour to point out some of the remedies for an evil that is well known to exist, but which goes on to a great extent practically unchecked.

LONDON SCHOOL OF DENTAL SURGERY.

We are very glad to learn that Mr. Thomas A. Rogers has been elected Dean of the London School of Dental Surgery. The Committee of Management have been fortunate in securing the help of a gentleman who is in every way so fitted for such duties as devolve upon the Dean of a Dental School. Mr. Rogers has undertaken no light task in accepting office, for there are many desirable reforms to be carried out before the institution can be considered as in fair working order.

THE DIETARY RATIONS IN THE BRITISH NAVY.

Dr. Hunter (*Statistical Report of the Health of the Navy for the Year* 1871) remarks that "to get the full value from the biscuit and salt pork requires excellent teeth and great capability of digesting fat." He goes on to say that the result of a great number of observations has shown him that "seamen are generally deficient in the number of their teeth, many having lost four molar teeth before arriving at thirty years of age."

The want of nourishing power in what is not a bad dietary as regards quantity is then, we believe, owing chiefly to the form in which the food is taken.

THE REPLANTATION OF TEETH.

By Isidor Lyons, M.R.C.S., L.D.S., L.R.C.P. Edin.

(*Continued from page* 221.)

It will be observed in the following cases of replantation of teeth that there is a diversity of disease, such as acute inflammation of the pulp, acute and chronic periodontitis, and exostosis, and in all of which the operation was performed after the manner described in the October number of this journal.

Case 1.—Jan. 29, 1869 : Elizabeth M., aged 22. The tooth, a left lower molar, which had been the subject of alveolar abscess six months previously. At present has acute inflammation of its pulp, and is carious on the anterior surface. Various dressings having been applied for three weeks without success in the hope of destroying the nerve, it was determined to extract and replant the tooth. Carbolic acid being the antiseptic employed, the tooth was returned to its socket.

Feb. 12 : Patient has suffered much pain, and there is swelling of the gum since the operation. Salines and poppy fomentations prescribed.

March 4 : Patient is able to masticate on the tooth, and it is well in every respect.

May 4 : She returned, complaining that the plug (an amalgam) with which the tooth had been stopped, had fallen out a fortnight ago, and ever since she had suffered from toothache, and also that the tooth was sensitive to heat and cold. To verify her statement, a drop of cold water was let fall into the cavity which had contained the stopping, and it gave her all the shock of pain which is experienced when cold is applied to a carious cavity in an otherwise sound tooth. The tooth was refilled.

May 11 : Has had no pain since.

This patient has been seen from time to time, the last being in July, 1873, when the tooth was as useful and firm as possible.

In the above case it follows that either the branch of the inferior dental nerve supplying the tooth must have united again, or there must be some additional mode of supply of nervous sensation to a tooth than we know of.

Case 2.—May 24, 1869 : Mr. W., aged 24. The tooth, a second left upper molar, carious on masticating surface, and at present the subject of chronic periodontitis, which has continued for three months, and has been treated unsuccessfully by dressings and fomentations. On extraction, the tooth was seen to have fibrocellular growths on both buccal fangs, and the extremities of the latter are transparent. Treatment—Incised about an eighth of an inch of each fang, and employed chloride of zinc in place of carbolic acid.

June 1 : Is able to masticate upon the tooth.

18th : Experienced a slight return of periodontitis ; at the same time is suffering from severe cold.

23rd : Pain has ceased, and the tooth is firm.

Oct. 23 : Continues well.

May, 1870 : The tooth, which had been useful up to the last month, now became loose and useless, so was extracted.

Case 3.—July 20, 1869 : F. E. L., male, aged 16½. The tooth, a right upper molar, carious on the anterior and masticating surfaces, has been painful and tender for four years, but at present is affected with acute periodontitis, and has given intense pain during the last fourteen hours. Upon extraction, pus welled up from the alveolus, and on palatine fang is a sac nearly one inch in length, and the pulp is also disorganised and offensive. Treatment.—The sac on the palatine fang was excised ; and experiencing some difficulty in returning the tooth, portions of the buccal fangs were cut off.

28th : There is some swelling on surrounding gum, but no pain except on pressure.

Aug. 3 : Tenderness to pressure has disappeared.

Dec. 28 : Continues well ; but there is a small recurrent gum-boil.

April, 1870 : Continues well. Recurrent gum-boil has disappeared.

This patient was last seen in August, 1873, when the tooth was as firm and useful as the rest.

Case 4.—July 9, 1869 : M. H., female, aged 24 (phthisical). The tooth, a first right lower molar, carious on anterior surface, and has been filled some months previously ; but chronic periodontitis has supervened. On extraction, the fangs were seen to be much absorbed. It was found impossible to return the tooth to the same level as the rest, owing to the pain thus caused.

13th : Pain has been severe, and tooth is still raised.

23rd : The tooth is at the same level as the rest, but loose.

Nov. 29 : Tooth is free from pain, but is loose and useless, so was extracted.

Case 5.—June 11, 1869 : Mrs. B., aged 40. The tooth, a right upper molar, carious on the anterior surface, and presented marked symptoms of chronic periodontitis. The fangs were united and partially absorbed. Treatment same as in No. 1 Case, with exception that a portion of the fang was excised.

June 19 : Has had no pain ; but tooth is loose.

29th : Tooth is firm.

This patient was last seen in January, 1872, when the tooth was firm and useful.

Case 6.—July 12, 1869. M. D., male, aged 38. The tooth, a second right upper bicuspid, carious on posterior surface; has occasioned great pain at different times for some months; upon removal the fang was found to be exostosed at its extremity. Treatment was the same as in No. 1 case, except that the extremity of the fang was "pared" to its natural shape.

July 16: Patient has had no pain since the operation.

30th: Can masticate upon the tooth.

This patient has been constantly seen up to October, 1873, the tooth continues firm, and he has never suffered pain or inconvenience with it.

Case 7.—July 13, 1869. Mary R., aged 28. Tooth, a right upper molar, carious on masticating surface; was stopped two months previously, and is at present affected with chronic periodontitis; on removal was found to have both fangs partially absorbed. Treatment same as in No. 2 case.

16th: Has had but slight pain.

29th: Tooth can be used in mastication.

Dec. 10: Continues well.

In April, 1870, the tooth having become useless, was extracted.

In this case, the second right upper bicuspid, the second and third right upper molars, had been extracted some years previously, so that the tooth stood alone, and merely impinged upon the anterior tubercles of the second right lower molar; hence the same source of irritation which had caused the former attack of chronic periodontitis still continued.

Case 8.—Nov. 12, 1869: L. A. L., aged 18. The tooth, a right upper molar, carious in the masticating surface, and at present is the subject of acute inflammation of the pulp. Various dressings had been applied to destroy the nerve without success. Treatment same as in No. 1 case, with exception that chloride of zinc was employed.

Nov. 16: Has had no pain, but there is some swelling of the gum.

27th: Is able to masticate on the tooth.

Dec. 2: Has an attack of periodontitis; tooth raised very much; poppy fomentations applied.

6th: Pain and swelling continued three days, but have now diminished.

July 20, 1870: Continues well.

This patient was last heard of in March, 1873, when the tooth was firm and useful.

Case 9.—January 2, 1870. S. D., male, aged 33. The tooth, a right upper molar, carious on posterior surface, and has been painful for months; is tender on pressure, and has openings on buccal surface of gum, from which pus oozes. The tooth had not been removed, because it supported an artificial denture.

January 24 : Case is so far satisfactory that he is able to use his artificial teeth.

Feb. 24 : Continues well, and is progressing satisfactorily.

May 13 : Continues well.

This patient was last heard of in July, 1872, when the tooth was in every respect useful.

Case 10.—Nov. 4, 1870 : Mrs. C., aged 40. The tooth, a right lower bicuspid, has been the subject of chronic periodontitis for two years, and is now loose. Treatment same as in No. 8 case.

Nov. 11 : Has had no pain since operation.

Dec. 4 : Tooth is useful for the purpose of mastication, but is not firm.

Feb. 12, 1871 : It is now firm.

May 6 : Continues well.

This patient has been constantly heard of up to August, 1873, when the tooth was useful.

Case 11.—March 29, 1870. E. L., female, aged 25. The tooth, a right upper bicuspid, carious on posterior surface ; has been the subject of chronic periodontitis for six months. Treatment same as in last case.

April 2 : There has been some swelling, but no pain, except on pressure.

15th : Is able to masticate upon it.

May 4 : Continues well.

This patient was last seen in April, 1872, when the tooth was firm and useful.

Case 12.—Sept. 27, 1871. G. G., aged 17. The tooth, a first left lower bicuspid, carious on posterior surface, and affected with chronic periodontitis. Treatment the same as in last case, with exception that some absorption having taken place at the extremity of the fang, the latter was excised ; unfortunately, in doing so, the tooth was fractured obliquely nearer to its neck ; however, it was determined to replant it, so the two fragments were adjusted to each other, and the tooth returned to its socket.

October 4 : Has no pain, but tooth is loose.

Nov. 3 : Tooth, although not firm, is useful for the purpose of mastication.

This patient was last seen in Oct. 1873, and the tooth, although not firm, continued useful.

It will be seen in the above twelve cases of replantation, that nine are successful, and three have failed ; that is to say, of the latter, one lasted four months, one nine, and one twelve months ; whereas with the successful cases, four have reached their fifth year, and five, either their third or fourth ; and as far as known, they still continue to be useful.

ODONTOMES.

(TRAITE DES TUMEURS. PAR PAUL BROCA.)

ODONTOMES GENERALLY.

III.—*Division and Classification of Odontomes.*

(*Continued from page* 203.)

THE minute and perhaps fastidious details which I have thought it my duty to place before my readers were necessary, in order to comprehend the origin and manner of formation of odontomes, and to explain the phases of the evolution of the tissue of these tumours. Already in the preceding description it may be seen that odontomes, with relation to their structure, form, and properties, present great differences, according to the time of their first appearance, and constitute as many varieties as there are periods in the evolution of the dental follicles. Many of these varieties may in their turn be subdivided into secondary varieties. Finally the tissue of odontomes, preserving most frequently the property of dentification which characterises the dental bulbs, it frequently happens that the same tumour undergoes in its development successive phases which entirely change its aspect, consistency, and structure. It is not, then, surprising that tumours so dissimilar have been hitherto described as distinct kinds, and that the common link which allows us to-day to join them into the same group has not been recognised. To establish a reconciliation between them, and to prove their parentage, it is indispensable not only to have recourse to a microscopical analysis, but also to be acquainted with, in their minutest details, the evolution of the odontogenical tissues and the formation of the dental tissues. This is the only excuse I can offer for the length of the explanation which has just been read.

Although at the present time I am acquainted with a large number of varieties of odontomes, it is possible, and almost certain, that many others exist. When the attention of observers has been drawn to this order of facts, they will doubtless discover in man, and above all in animals whose dental evolution differs from ours, new forms which will allow the completion of the series of odontomes. But I hope that the ulterior facts will easily find place in the frame I propose to trace.

It has been seen in the preceding paragraph that the anatomical and physiological character of odontomes depends on the epoch of the dental evolution where commences the work of hypergenesis, which gives birth to them. We are, then, naturally led to divide odontomes into four groups, corresponding to the four periods of the development of the teeth.

1. The first group comprehends *embryoplastic odontomes.* It

can be subdivided into two principal varieties, according as to whether the tissue of the tumour remains in a purely fibroplastic state, or whether, having undergone a more advanced evolution, it has passed to a state of fibrous tissue. We shall designate these varieties as *fibro-plastic odontomes* and *fibrous odontomes.* They are, besides, bound between themselves by different intermediate forms.

2. *Odontoplastic odontomes* occurring at the second period of the evolution of the teeth constitute our second group, where we shall establish at first two principal subdivisions. In man the dental follicle at this period only encloses a single vascular organ, that is the bulb, and the result is that all the odontoplastic odontomes in man are *bulbous;* but in the herbivora a second vascular organ, the cementum, already exists, between the wall of the follicle and the enamel organ, and can become the seat for the work of hypertrophy, which gives birth to *cemental* odontomes.

The bulbous odontomes appear in many different forms, of which many are merely the successive stages of the evolution of the same pathological product. Some are only fibrous, or fibro-plastic, and only differ from the embryoplastic odontomes by the row of dentinal cells which the microscope shows in their cortical layer; others enclose besides in their texture a variable quantity of dentinal grains; others are in the course of actual dentification, and are composed at the same time of odontogenic tissue and definitive dental tissue mixed in variable proportion; others are dentified throughout their whole extent, and constitute extremely hard masses, composed of dentine alone, or of dentine and enamel, but never enclosing cementum unless in the herbivora.

Finally the bulbous odontomes are divided in man into odontomes *not dentified* (with or without dentinal grains), odontomes in the *course of dentification,* and *dentified* odontomes (with or without enamel). These last may be dentified in a single mass or in several distinct and independent masses.

3. *Coronal odontomes* occurring during the formation of the crown are always more or less dentified, although the first appear at a moment when dentification has already commenced. That part of the crown which is formed before the commencement of the pathological work does not undergo any alteration, and is found perfectly recognisable in a point on the surface of the tumour. This in man is constituted by hypertrophy of the pulp, and encloses after dentification only dentine and enamel. But in the herbivora it may depend upon hypertrophy of the organ of the cementum, and is afterwards transformed into a mass of cementum. This group, like

the preceding one, can also be subdivided into two secondary groups, the *coronal cemental odontomes,* which are only observed in the herbivora, and the *coronal dentinal odontomes,* the only ones which can be found in the human subject.

The first present two varieties, or rather two forms, according to whether the hypertrophied cementum is on the exterior of the cementum organ, or upon that part of the organ which penetrates into the *elevations* of the tooth.

The coronal dentinal odontomes can also appear in two forms essentially distinct, which we call the circumscribed form and the diffuse form. Those which are *diffuse* are the result of the hypertrophy of the whole of the pulp. They consist in a tumour relatively voluminous which surmounts the portion of the crown which has been formed before their appearance. Occupying the whole of the pulp to its base, they offer an almost absolute obstacle to the completion of the crown, and consequently to the formation of the fangs. This character they have in common with all the odontomes of which we have spoken.

It is not the same with the *circumscribed* coronal odontomes. They appear when the pulp is only hypertrophied in one spot, where it has given place to a slight lateral vegetation. At the level of this vegetation the natural development of the crown is found arrested, but it continues elsewhere; the crown extends gradually to the base of the pulp, after which the fang is normally formed, and the evolution of the tooth regularly achieved up to the point where the existence of a small lateral tumour added to one of the sides of the crown renders the eruption rather more laborious. These tumours differ from the others very much, in their form as well as in their progress. They have been described as *warty tumours of the teeth* by the authors who do not suspect their nature; but their nature does not differ from those of the diffuse odontomes, as in both these cases it is a question of hypertrophy of the pulp giving place to a tumour which is afterwards dentified, and makes one with the part of the tooth normally formed.

4. The fourth and last group comprehends the *radicular odontomes,* which appear during the formation of the fang. It is in this period, and in this period only, that cementum first appears upon the human tooth; the radicular odontomes are the only ones which in man can after dentification enclose cementum. On the other hand, they cannot enclose the enamel, the organ of enamel not passing the level of the crown.

The existence of the *cemental radicular* odontomes, that is to say, of those composed exclusively or principally of cementum, is experimentally shown.

It is probable that *dentinal* radicular odontomes also exist, that is to say, composed principally of dentine, but up to the present time I do not know of any examples.

The heterotopic odontomes developed in the abnormal dentinal follicles, which do not differ essentially from the normal follicles, can easily be distributed into the preceding groups. Nevertheless, it is preferable to study these foreign tumours separately, which by their position, their connection, and sometimes by their termination, differ noticeably from other odontomes.

I designate under the name of *composite odontomes* those tumours which partake of the nature of odontomes, but which by the complexity of their structure, by the diversity of the lesions which they produce at the time upon adjacent follicles, escape all definition, and whose determination is still obscure.

The different varieties of odontomes which I have just enumerated are sufficiently numerous for it to be useful to recapitulate them in the following table:—

I.—Ordinary Odontomes.

Periods Odontogenic.	Names of the Odontomes.	Subdivisions.	Varieties.	Special or Transitory Forms.
1. Period embryo-plastic.	O. *embryo-plastic.*	Fibro-plastic. Fibrous.		
2. Period odonto-plastic	O. *odonto-plastic.*	(a) *Cemental* (*only in herbivora*).		
		(b) *Bulbous* ...	Not dentified (fibrous or fibro-plastic)	Without dentinal grains. With dentinal grains.
			In course of dentification.	
			Dentified ...	With or without enamel. In a single mass, or in many isolated masses.
3. Period of the formation of the crown.	O. *coronal.*	(a) *Cemental*	External ... Intra-coronal	*Only among the herbivora.*
		(b) *Pulpal* or *dentinal*...	Circumscribed (warty tumours of the teeth). Diffuse.	
4. Period of the formation of the fangs.	O. *radicular.*	(a) *Cemental.*		
		(b) *Dentinal* (?)	Variety not yet observed.	

II.—Composite Odontomes.

III.—Heterotopic Odontomes.

(*Observed only among the herbivora.*)

ERUPTION OF THE TEETH.

By Herr Robert Baume.

(Vierteljahrsschrift.)

(*Concluded from page* 207.)

I must, in conclusion, turn to an opinion which is very often put forth. We have, namely, the question, why the eruption of the temporary teeth is attended with pain and cut with greater difficulty than the permanent teeth, so far answered in that the point must really break through its covering, whereas the latter meets with an empty space, namely, the alveolus of its predecessor; it has thus a cavity into which it has only to enter. The space in the alveolus (of the temporary teeth) must, for the purpose of the eruption of the permanent teeth, certainly only be slightly widened.

I ask now what is really understood by the alveolus of the fang of a temporary tooth in a state of advanced resorption. It is known that at every time during the resorption the tooth fits exactly to the touching fang; only on the spot which lies next to the permanent tooth an entire consumption of a portion of the alveolus takes place. Moreover (as for the rest) a new bony formation even takes place in the alveolus. The more the fang of the temporary tooth is deprived of its substance the smaller it becomes, and so much narrower the alveolus. It is therefore clear that it is only a very small cavity that is spoken of when the alveolus of an almost resorbed fang of a temporary tooth is referred to. The narrow space of the alveolus of a temporary tooth bears no proportion to the much larger crown of the following permanent tooth. Still clearer will be seen the untenableness of the previous opinions referred to, when we think, for example, that the bicuspids in the lower jaw are preceded by double-fanged molars; such a divided alveolus could not be fitted in any respect to receive a bicuspid. It is plain, therefore, that these alveoli must be considerably narrowed by the formation of bone during the course of the resorption of the root.

When it has been asserted that the compensating tooth at its eruption has only to enter the alveolus of the temporary tooth, it has been overlooked that the alveolus of a temporary tooth disappears in proportion to the fang in it. It follows, then, that the previous acception is nothing more than an *idle hypothesis*, which can be easily refuted by the observation of the anatomical conditions.

One would think, on the contrary, that the eruption of the temporary tooth from its bony surrounding would be a much simpler affair. They have merely to cut through the gum which covers the bony ridge, after a slight resorption of the bony lamella of the upper edge has taken place. On the other hand, the permanent tooth lies back much further, and has, apparently, greater hindrances to overcome. It must, by its gradual pressure forwards, not only absorb a portion of the bony alveolus which separated it from its predecessor, but also the predecessor's fang. These hindrances are certainly apparently much greater. How, then, does it happen that the eruption of the temporary teeth is frequently the cause of violent pain and troubles, which are accompanied by the severest symptoms? How is it that the same thing does not occur at the eruption of the permanent teeth? The cause of these symptoms we must in a great measure seek for in the tender constitution of the infant. At this period of life the different organs are in the process of active development at the same time, which may result in producing a heightened degree of susceptibility. The occurrence of any slight disturbance, as, for example, the eruption of the teeth, only strengthens the expression of these symptoms. It is universally known that cases occur where the eruption of the teeth gives rise to the severest symptoms. I am, nevertheless, inclined in general to the view that the severe dental irritation, which was formerly, in all cases without limitation, considered the result of the eruption, is generally the result of other causes. Nevertheless, the appearance of great disturbances, as I have already shown, is not to be disputed; the eruption of the teeth seldom takes place without some trouble, although cases have been observed where the child did not appear to have the slightest difficulty. The usual symptoms attending the eruption of the teeth are of a simple nature.

I mentioned above that the temporary teeth, at their eruption, have in reality only the gum to cut through; but in this precisely the principal cause for disturbance appears to lie. I must here remind you of the eruption of the wisdom teeth, which is generally accompanied by greater or less disturbances. The greatest portion of the crown has already broken through in little elevations, small portions of gum covering some parts of the tooth. In such cases there can be no question of retention through the bony walls of the alveolus. Neither does its neighbour stand in the way; nevertheless the patient suffers severe pain. Examining the painful part, we observe that the gum covering the crown is here and there not pierced, but is pushed upward by the growing tooth. From this results, self-evidently, a considerable laceration of the gum ; this only can in such a case be the seat of suffering, then all other causes can be easily excluded. This we plainly find in practice. One cut through the thick, swollen, pulpy gum, which is inflamed, and in some places perhaps already purulent, generally procures the patient an immediate lessening and speedy freedom from his pain. Occasionally the disturbance is so great that lock-jaw is produced. In many cases incision is not sufficient, it is then better to remove the overlapping gum by excision. If the tooth is retarded a long time by the gum, inflammation of the periosteum may generally be observed, the wisdom tooth in question being more or less sensitive. The cause of the periostitis is the pressure which is exercised upon the open end of the fang and its soft portion, the fang itself not being fully formed. If the fang has grown to its full length, the direct pressure upon the periosteum must be regarded as the cause.

The comparison of the eruption of the wisdom teeth with the temporary teeth gives a good stand-point. In children, after an incision, we cannot always see the result of the operation, but it may generally be favourably observed in grown-up people. The entire subsidence of trouble must show this statement to be correct.

It appears, moreover, when we compare the eruption of the temporary with the permanent teeth, that the laceration of the gum caused by the eruption of the teeth through this structure produces the pain, for the opposition which the gum brings against the pushing tooth appears to give rise to the pain. At the eruption of the second teeth this laceration of the gum no longer takes place, as normally the permanent tooth moves direct into the place of the entirely resorbed fang portion of the temporary tooth. In *this place the gum does not cover the jaw,* so that the tooth may enter unhindered.

If an explanation is to be found why the temporary teeth should be cut with pain and the permanent almost insensibly, in my judgment the cause is to be sought for in the circumstance *that the latter has no gum to pierce on its way ;* the former must overcome the opposition of this structure. The resorption of the temporary tooth and a portion of the bone is much easier than the removal of the covering gum, which is apparently absorbed with much greater difficulty.

The gum becomes gradually thinner as the tooth advances ; at last it is almost transparent, and appears like thin skin through which the outline of the tooth may be seen. The gradual thinning of the gum in the manner I have described above follows as a rule, and may everywhere be observed when the absorption of the gum keeps pace with the pressure of the tooth. Both these processes may, however, occur disproportionably; for example, when the tooth presses forward quicker than the gum disappears. As I have mentioned, under these conditions a tearing of the gum takes place, which is manifested in different ways—(1) The gum is considerably reddened and swollen, but spongy and puffy; for example, the patient in cutting the permanent molars feels burning and sharp pricking—in extreme cases severe pain, which he described as *extending round the whole jaw.* (2) The gum is very much reddened, swollen, and feels hard and firm. The patient complains of the same troubles as described in (1), only it is generally more severe than when the gum, notwithstanding inflammation and swelling, is softened.

There now remains the discussion of the question why the same appearances are not observed in other permanent molars as in the wisdom teeth; if it were only the gum which in so many cases renders the eruption difficult, the other molars have the same difficulty to contend with. The first and second molars are not always cut without difficulty. It not unfrequently happens that long before the eruption of these teeth the gum is very much swollen and the patient complains of sharp pain. Here also an alleviation may be procured by a deep incision, or an entire excision.

That among the molars the wisdom teeth are cut with the greatest difficulty may be explained, on the one hand, by the fact that the texture of the gum of the latter is considerably firmer and denser; it covers this part of the jaw in a thick layer. On the other side, we have to consider that these symptoms appear much more severe from the situation in which the disturbance arises. They lie in the immediate neighbourhood of the palato-glossal and palato-pharyngeal arches, having the tonsils between them. In consequence of the extension of inflammation in the above-mentioned parts, it is not to be wondered at that difficulty in swallowing might arise. On account of the proximity of the point of attachment of the masseter muscle, we can easily conceive that after simple inflammation of the gum partial lock-jaw might occur. With the other molars these disturbances do not occur.

Circumstances are altered when, at the period for the eruption of the wisdom teeth, there is no space left for them in the jaw; for example, when the second molar occupies the only remaining space. In such rare cases severe disturbance may arise, when, of course, there is nothing to be done by either excision or incision. Here, before anything else can be done, room must be procured, and this can be done only by extraction of the second molar.

I come now to the conclusion that in all likelihood the distended gum is, as a rule, the cause of more or less trouble. At the time of the first dentition the bone is but a slight hindrance, for the opening in the alveolus is so large that only a slight absorption of the upper edge is required to procure sufficient room for eruption, consequently the gum alone remains as the cause of disturbance, which I have endeavoured to show in the previous pages is really in many cases the only important hindrance to the eruption of the teeth.

GUTTA-PERCHA AND ITS APPLICATION TO MECHANICAL DENTISTRY.

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(*Continued from page* 211.)

It would be needless to enumerate the endless uses to which this remarkable substance is applied; doubtless you are all familiar with it in a hundred different forms. I may mention, however, that in the conduction of sound, gutta-percha is the most useful agent ever employed. Being flexible, impervious to water, and possessing insulating power, it is the most efficient of all substances as a coating or tubing for the copper wire of sub-marine telegraphs, and thus aids in producing the most marvellous annihilation of time and space our age has yet witnessed. A solution of gutta-percha and chloroform or bisulphate of carbon forms an excellent dressing for incised wounds, and a protection for abraded surfaces, burns, &c. It is used in the same way as collodion. Gutta-percha mixed with silica is now used as a stopping for teeth. It is found to be very useful as a temporary stopping, and time will test its efficacy as a permanent one. That prepared by Mr. Jacobs is the best.

The peculiar, I may say wonderful, properties of gutta-percha had not been long known before it was seized and experimented upon by several members of our profession, by whom it was applied to a number of simple uses in the mechanical department, such as the filling up of decayed portions of bone blocks, the foundation of natural teeth, and ultimately, in the manufacture of partial and entire sets of teeth. To suit these different purposes, it was mixed with glass, silex, and other mineral substances, and stained by various methods in order to assimilate it as much as possible to the colour of the gum. If the result of all these experiments, and the experience of years, has not equalled or realised the sanguine hopes of many, it has at least brought a knowledge of the true value of gutta-percha to us, and given it a distinct, though perhaps not a prominent place in our work-rooms.

We will now endeavour to explain the various methods of preparing gutta-percha for, and applying it to, our artificial work. First, we will say a word as to the selection of the piece of gutta upon which we are about to manipulate. At the risk of a little repetition we will notice those qualities and modes of preparation which render it best adapted to our purpose.

We should select a piece heavy, dense, white in colour, tough to cut, but which when cut, will present a moist and greasy appearance, somewhat like a newly-cut cheese. Though this seems a very simple matter, yet a good choice will save much time and disappointment afterwards. Having secured a piece as near as possible to what we have described, and cut off with a knife and mallet the required quantity, we plunge it into a vessel of boiling water. Two minutes will suffice to soften it. After taking it out, manipulate it with the fingers, picking out all the darker portions and gritty matter. The white and purer portions we retain, and subject them again and again to the same process until perfectly free from dark colour and foreign matter. Then spread and draw it out into thin transparent sheets. It is now ready to receive any form or colour your ingenuity can give to it for your specific purpose. There are other and more complicated means of refining and purifying, by bleaching, or by dissolving the gutta in chloroform, ether, &c. But these methods, though they may purify and whiten, take away that toughness which is so striking a characteristic of gutta-percha, and is so essential to its usefulness. The simple process I have just described will, I think, be found the best suited to our purpose. Having prepared it so far, we proceed to colour it by an equally simple process, in order to bring it as near to the natural colour of the gum as possible. Take the gutta out of the water in its softened state, sprinkle on the surface a little carmine, work it up between the fingers until all the colour is taken up. Resoften and repeat the process until the required tint is obtained. A small quantity of carmine will go a great way. The secret is not to grudge time or trouble in kneading it into the gutta.

We will now consider the circumstances under which it is most applicable, and the cases to which it is best adapted. As a permanent appliance it should only be used in some exceptional cases, when great tenderness of the gum exists, precluding the use of pieces of a harder base. Some practitioners insert structures of gutta-percha adapted to gold plates, of which some look exceedingly well; but I incline to the belief that the true value of gutta-percha to us extends only to its use as basis for our under plates, and for temporary pieces for preparing the mouth after the extraction of teeth until quite ready for the reception of a permanent case, or for patching up an old case.

The great obstacle to the use of this material for permanent pieces, is the difficulty of making it adhere or unite with any mineral or metallic substance with that perfection so absolutely necessary. However ingenious the means which have been adopted to secure the end, they have failed in a greater or lesser degree, so that the food and secretions of the mouth will find their way in between, and ultimately become offensive to the wearer. It will also be found to become porous on the surface after having been some time worn, and would then, if not continually changed, defeat the purpose for which it was originally intended—viz., to present a soft and genial surface to the gum. When first introduced it was sought to make a permanent base entirely of the gutta. To this end a sheet of gutta softened was placed upon the model and trimmed to the size of the plate, then re-softened, and pressed with the finger into all the inequalities of the gum, leaving it thick along the alveolar ridge, into which the teeth being broken roughly, and ground with an under-cut wire set, and gutta packed round and between the teeth. This was effected outside by means of round-pointed instruments, heated by a spirit-lamp. The lingual side was packed in a similar manner, and an extra sheet of gutta welded on to it, to strengthen and make up the palate. The whole was then trimmed with scissors or sharp knives heated, and smoothed with warm burnishers, and the fingers covered with any soft membranous substance, and kept moist by some saponaceous mixture. The difficulty of fixing and retaining the teeth in position, particularly in shallow and partial cases, and the absence of reliable strength in the construction of the whole, rendered some improvement necessary before this material could be subjected to a fair trial. Accordingly we find a band of half-round wire introduced, to which the teeth were soldered, and the gutta-percha packed round them, and finished as before. This was an improvement, but though it seemed to do very well for entire lower pieces, it was found not to be well adapted for upper or partial pieces. To mount the teeth on plates, and imbed them in the gutta, naturally suggested itself to the minds of the operators, and as the gutta would not unite with or adhere to the metal, these plates were perforated with small holes through which the gutta being pressed, united itself with that packed on the opposite side, rendering the piece more solid and strong. Any description of flat or tube teeth were suitable for fitting on these plates, to which they were of course fastened before embedding them in the gutta. The plates were made of tin, silver, and other metals, supposed not to act injuriously on the mouth. Improvements also had been made in the mode of preparing and manipulating the gutta itself, so that both in material and construction sufficient advance had been made to give to such pieces a fair and legitimate trial. That trial was given, and judgment recorded against them as permanent pieces, except, as I said before, in peculiar cases. While these various experiments thus tended to prove the forms and cases in which gutta-percha ought not to be used, they at the same time clearly showed that it possessed qualities more congenial to the mouth in certain cases than metal, and that from its plastic character it could be more readily adapted to any changes in the alveolar ridge after the extraction of teeth, roots, &c. It was therefore sought to discover some means by which it could be successfully applied to such cases, and by simply lining the plate, and making use of it as a cushion between the metal and the gum, this desideratum was effected, and a place and a purpose assigned to it, not so prominent as some anticipated, but so useful as to give satisfaction to all those who had expended time and money in the prosecution of these experiments. After repeated trials, the difficulty of getting it to adhere to the plate was to a great extent overcome by the use of thin wire gauze soldered on to its palatal side. When this is heated and the softened gutta pressed, they will hold together with considerable tenacity.

We will now proceed to describe the mode or manner in which plates are constructed for the purpose, and to illustrate this we will take an entire upper in which there are no remains of teeth or roots. Having taken the model and prepared it in the usual way, first design the intended shape of the plate, then taking a sheet of modelling wax about the thickness of a shilling piece, press it upon it, cutting it to the lines made for the plate, except on the palatal border and back of the alveolar ridge, which should both be kept a full sixteenth of an inch short of the edge. Having secured it in this position, you cast it and strike up your plate in the usual way. When finished, there will be a vacuum or chamber in it the thickness of the wax, but the palatal edge of course will be close to the model; this is done in order that it may present a thin edge to the tongue. In this state the plate may be fitted to the mouth and the bite taken in the usual way, the wax on the model filling up the vacuum until fitted. Should you have taken the bite in any other manner previously, you may at once proceed to mount and finish the piece. Before fastening or polishing, however, you will remove the wax from the model, cut the wire gauze a little smaller than the wax, and press it into the chamber. To do this it is sometimes necessary to give it a gentle blow on the metal model, being careful to place paper between it and the lead, but this is seldom required, the gauze readily yielding to the pressure of the finger or burnisher. Place the gauze in its place, and proceed to solder it by as many points as you think will suffice to hold it firmly, taking care that the edges are securely attached. You may now polish the plate and fasten on the teeth. This done, and the piece clean and polished, take a piece of gutta cut to the same size as the wax, but somewhat thicker, soften it in warm water, and press it into the chamber upon the gauze, which should be previously heated over the lamp. When in its place, and while soft, place it upon the model and press, until the plate is fitted quite home to its proper position. It may now be plunged into cold water and the edges trimmed with a hot and sharp knife. When these are sufficiently smooth and rounded, the case may be pronounced finished.

In constructing an entire lower piece, you proceed exactly in the same way, with this difference, that the plate must in no part touch the gum, the gutta covering its entire outer surface, and so all risk of any cutting edge is avoided. The great benefit to be derived from this application in such case will readily be seen, when we consider that this plastic cushion can be so easily changed, to suit every alteration in the gums, resulting from the gradual absorption of the alveolus, and that without altering in any way the arrangement of the case or taking it to pieces. In this way the temporary may be said to form a permanent piece. Its application to partial pieces, and to cases where little absorption of the alveolus has taken place, will always require an amount of judgment which experience alone can give; for we must not forget or lose sight of the fact that, the advantages to be derived from its use are only to be obtained at the expense of increased weight and bulk, disadvantages which in many cases more than counterbalance the benefit.

In striking up plates for these pieces, instead of wax, a plate of thickish pewter, zinc, or copper may be first adapted to the metal model, and the gold struck over it; but whatever plan you adopt you must have the chamber for the gauze and gutta-percha.

Suppose we take the case of a lower jaw in which the eight or ten front teeth remain, the gums tender, and probably soft and yielding. In such a case we would simply put two strips of wax behind the bicuspids, nearly the breadth of the intended plate, leaving the lingual surface of the teeth and gums perfectly free. We cast a metal model, strike up the plate, which when done, will fit the plaster model with the wax upon it. The teeth being mounted and the wax removed, we solder the gauze in the chambers, and fill them up with gutta. In cases of this character I consider the use of gutta-percha invaluable. In cases of sensitive teeth gutta-percha may be made use of to line the bands, but can only be applied to those which admit of their being a certain width and tolerably straight. To apply it in this way, cut the exact form of your band in card-board, and from this cut the gold, leaving the side edges about the sixteenth of an inch wider (the gold should be thinner than that usually required for our bands). Place the piece of card on the gold, and with your pliers bend the edges over it on each side along the whole extent, this will hold it firmly in its place. Hammer it gently, burn out the piece of card, you then have the overlapping edges to hold the gutta-percha. Some useful hints may be obtained from a paper read by Dr. Saunders before the Odontological Society in 1857 in reference to gutta-percha; also from a paper read by Mr. Coleman before the same society in 1860.

Mr. Trueman, in his specification in his application for a patent, thus describes his process:—

First, I take the best model that I can in wax, in the usual way, and prepare a plaster cast from it, in which I do not attempt to remedy any defects, as that can be better done in a future process. This plaster cast I render as hard as possible with resin and wax, in equal proportions, which likewise renders the plaster impervious to water, and enables me to immerse it in cold with impunity. This being complete, I construct a gold wire frame, in such a manner as to support the different artificial teeth firmly in their places, and likewise give strength to those parts where the gutta-percha is necessarily thinner, as behind the front teeth in the lower jaw; this frame I firmly solder together, rendering it alone as strong as the structures on the old plan; but I construct it in such a manner that in the finished teeth it is embedded in the centre of the gutta-percha, and no part of it allowed to touch either the gums or remaining teeth, its only object being to give strength. I then proceed to mould gutta-percha around this frame on the plaster model, in such a manner as to produce the shape required for replacing all the deficient structures of the mouth, placing the mineral teeth already prepared on the pins fixed for their reception, and moulding the gutta-percha around them so as to replace the sockets and gum originally existing around the natural teeth; this structure may then be finished to such a nicety as to represent accurately every peculiarity of surface. Then I place the work in the mouth at a temperature just sufficiently high to enable the gutta-percha to be moulded to the mouth itself, and thus it receives the shape it is to retain until quite finished. I then remove the mineral teeth, leaving the sockets that receive them empty, and the gutta-percha on all sides apparent preparatory to my last process; this being to plate all the surfaces that come in contact with friction, either from the tongue or cheeks, with a strong plate of gold; this may be obtained by the electrotype process, being particular not to have any gold in such a position that it can possibly touch the soft parts under pressure during the action of the mouth, but allowing it to dip into every socket for the mineral teeth, and thereby giving them immense strength. The teeth are again replaced, and fastened on the gold pins in their sockets, and all that portion of the gutta-percha that represents the gum I either colour by means of pigments, or enamel the surface of the gold which has been allowed to pass over it. This completes my artificial teeth, without one destructible or defective material being used, and yet without subjecting the gums to any hard, unyielding substance. I then immerse them in water at about 120 or 130 degrees, which accomplishes two objects—first, removes any unpleasant sensation from the cold metal; and, secondly, enables the gutta-percha to intimately adapt itself to its resting-place, whilst the mouth is in action for the first few minutes, and so receive from the mouth itself the form that it is to retain, and thus rectify any imperfection in the plaster cast or wax impression.

NOTES ON SURGERY AND PATHOLOGY.

Serous Cysts in the Cheek. Dr. Paul Jüterbock. (*Deutsche Vierteljahrsschrift, Juli.*)

To the already well-known eight cases of serous cysts published by Brun (" Handbuch," i., p. 154), Jüterbock mentions two others lately under observation :—

(1). A female servant, seventeen years of age, was received into Bethanien, on account of inflammation (parulis) on the left side of the face. According to her own statement, she had suffered from a painful swelling at the left zygomatic arch ever since she was a child. A year ago she had a large abscess there, which burst outside the cheek, and had since then gradually increased in circumference. The parulis was soon removed, and the following is the present condition: The left cheek shows an even increase in volume, and is decidedly thicker than the right healthy side. The skin which covers the swelling shows nothing abnormal, not the slightest attenuation at the most prominent parts is to be observed. On touch apart from the large swelling may be felt a smaller one, hardly the size of an almond, a partly movable lymphatic gland in front of the left ear, distinguishable below the zygomatic arch. The larger swelling everywhere plainly fluctuates, and a decided fluctuation may also be felt opposite the second upper molar. The mucous of the whole of the mouth appears unchanged. The prominence of the moderately elastic tumour shows less inwardly than outwardly. The tumour is nowhere pellucid. A transverse cut being made in the mucous membrane of the cheek, several ounces of a sanguino-serous liquid were emptied. The cyst was penetrated by a mesh-like net of fibrous strings, but the walls were smooth. To induce separation of the sac, lint was packed in and a counter opening made outwardly below the left zygomatic arch.

In this case, as Jüterbock observes, on account of the equal distension of the tumour throughout the whole cheek, we fail to recognise parotidean ranula.

(2.) A young lady, twenty-one years of age, had noticed two years before, the first commencement of an abscess in the left cheek. Notwithstanding that two punctures were made the tumour gradually increased. At the same time the patient suffered much from toothache in the left side, and was obliged to have several teeth drawn.

The following are the present conditions: There is a plainly circumscribed swelling about the size of a small hen's egg engaging the front lower part of the cheek. In consistency it is firm and fluctuating, especially at the mucous membrane of the cheek corresponding to the second lower molar. The latter and the outer skin are normal. During mastication a large quantity of clear secretion was ejected at the aperture of Steno's duct.

In this case a transverse cut in the cheek was also made, when an ounce of pus was emptied, whereas formerly at both punctures only a clear transparent fluid was present. The walls of the cyst were scarified and taken away with the forceps. The remains were cauterised with nitrate of silver. In this case also there was no question of a parotidean ranula. —*Archiv. f. Klin. Chirurgie XV., Band. II., Heft.*, 1873.

DEATH FROM CHLOROFORM.

(British Medical Journal.)

We read in the *Ohio Clinic* of September 27th:—"Still another death from chloroform!" The Cincinnati Hospital is peculiarly unfortunate in this regard. On Wednesday last a German, aged forty-eight, entered the hospital with a dislocated shoulder-joint. Anæsthesia was established, the luxation was reduced, but the patient was dead. Dr. N. P. Dandridge, who had charge of the case, made all the usual efforts, of course, at resuscitation.

Thumb Sucking.—Dr. Horace Dobell, writing to the *British Medical Journal*, says, "I have observed that a peculiar and rather common deformity of the chest is caused by the habit of sucking the thumb in infancy and early childhood. The weight of the arm on the thorax of the child during sleep produces depression of the ribs in the line occupied by the arm when the thumb is placed in the mouth. As this is a very important effect of 'thumb-sucking' never hitherto pointed out, I think it desirable to place this note on record for the benefit of other observers."

ON ARTIFICIAL RESPIRATION AFTER THE OPERATION OF TRACHEOTOMY.

By Benjamin W. Richardson, M.D., F.R.S.

(MEDICAL TIMES AND GAZETTE.)

At the conclusion of a lecture published in the *Medical Times and Gazette* on December 4, 1869, in which was described the double-acting elastic hand-bellows I have invented for artificial respiration, I took occasion to point out that in various cases of acute disease—such as cases of bronchial spasm or of failure of respiratory power,—when death was at hand, the practice of artificial respiration, by the bellows, might prove of service. The following clinical history, briefly told, illustrates forcibly the truth of this proposition :—

A child, aged 4 years and 4 months, was under the care of my friend and neighbour Dr. Neale. She had shown for ten days some obscure symptoms, varying in intensity, of irritation of the throat, with intermittent pyrexia. On Sunday, the 20th of last month (July), on his morning visit, Dr. Neale found the child breathing heavily, and again feverish. On examining the throat, he discovered a diphtheritic patch on each tonsil; he detected also a group-like respiration. A little later in the day I was called to meet Dr. Neale in consultation. We agreed as to diagnosis and treatment, and all progressed well until Tuesday morning, the 22nd, at three o'clock. At that time the symptoms changed, food and medicine were refused, and in a few hours the respiration was embarrassed from obstruction in the larynx. Severe paroxysms of spasmodic breathing also occurred at frequent intervals. An emetic gave great temporary relief; but the symptoms afterwards increased, and at 2 p.m. were so urgent that the question of the performance of tracheotomy came under consideration. At half-past six, at a consultation between Dr. Neale, Mr. Christopher Heath, and myself, the operation was determined upon as a necessity. I administered methylene bichloride, which acted promptly and effectively, and Mr. Heath operated.

Recovery from the anæsthesia was rapid, and the little patient soon began to breathe freely through the tracheal tube. Dr. Neale having to leave, I undertook to remain until his return. About an hour after the operation the child was suddenly seized with an attack of severe spasmodic breathing, followed by the escape of tenacious frothy mucus through the tracheal tube. I cleaned the tube freely, and drew up the mucus through the tube, but the paroxysm continued; the features became livid; there was a sharp convulsion; the natural respiration ceased; the pulse ceased; and, to all appearance, there was death. At this moment, affixing an inner tracheal tube to the double-acting bellows, I thrust the inner into the outer tracheal tube, and commenced steadily to keep up artificial respiration. I confess I had no great expectation of useful results; but to my relief, after sustaining the artificial respiration for a period of three minutes, the patient recommenced to breathe independently, and by the time Dr. Neale, who had been sent for, returned—about ten minutes,—she was quite conscious, warm, and breathing freely. We watched alternately through the night, and the night was passed comfortably. Food was freely taken, sleep was natural, the pulse was firm and regular, never exceeding 120, while the respiration, though at times quick (36 per minute), was not laboured. At 8 a.m. on Wednesday, the 23rd, Mr. Lovell and Mr. J. E. Neale being now in attendance, a paroxysm of very severe dyspnœa and spasm recurred, but was quickly relieved by the use of the bellows, and on Dr. Neale's arrival, later in the day, the recovery was so complete that the child was playing at "catch ball" with a sponge. She progressed favourably until 8 p.m. of this day, the 23rd, when from a sleep of about twenty minutes she awoke with another violent paroxysm of the dyspnœa. *In extremis*, Dr. Neale again set up the artificial respiration, and in two minutes the natural respiration was restored. After this there was natural action of the kidneys, and milk was freely taken. At 9 p.m. another extreme attack of the dyspnœa supervened, relieved in the same manner after the use of artificial respiration for five minutes.

At 9.30 I rejoined Dr. Neale, and we found now, for the first time, moist crepitation from exudation or condensation of fluid in the upper surface of both lungs. Relief in removal of some of this fluid was afforded by a device of Dr. Neale's of making a Higgins syringe act as an aspirator, and there followed a period of gentle and hopeful breathing. But at 10.30, on the occurrence of another of the extreme paroxysms of dyspnœa, the respiration ceased altogether, the pulse ceased, the countenance assumed the lividity of death, and death, indeed, once more appeared complete. The tracheal tube was removed, the tube of the bellows was inserted into the tracheal opening, artificial respiration was established, and after an interval, as far as we could measure, of five or six minutes, the natural respiration was restored.

From this time, unhappily, the pulmonary lesion increased; the obstruction to the breathing passed from a local to a general condition; the bronchial passages became closed from accumulation of fluid; and absolute death, without return of asphyxia and without a struggle, occurred at 1.30 on the 24th.

To have recorded the ultimate fact of death in this case, after such restoration from apparent death, is indeed a painful duty. Yet the one particular process for restoration—artificial respiration—is thereby in no degree lessened of its value. It gave a renewal of thirty hours of life, during which if we had known more respecting the removal of those fatal conditions which so commonly commence in the extreme or peripheral parts of pulmonary organs, we might have made the temporary safety complete and permanent. Step by step, and with that agony of experience which ever attends the highest efforts of the human mind, we shall attain one day even to this perfection. We shall acquire a still more perfect method of maintaining artificial respiration; we shall learn to introduce, with good effect, other gases and vapours with the common air; we shall regulate pressure on the pulmonary surface; we shall sustain, by some simple means, the muscular force; and we shall supply to muscle the stimulus it has lost from the exhausted nerve. In a word, we shall hold mastery of conditions in the presence of which the sick person cannot die. This, the *summum bonum* of medical science and art, may be far off; but he is no physician who does not live for it, and the history I have written above demonstrates that one of the most important steps towards it is laid for our advancement.

HAIRY MEN WITH SINGULAR DENTAL CONDITION.

(THE BRITISH MEDICAL JOURNAL.)

THE anthropological interest attaching to *homines hirsuti,* always very considerable, has much increased since the observations of Darwin. Two remarkable examples—Russians, father and son—have lately arrived in Berlin, and have been the subject of a lecture by Professor Virchow, of which we find an abstract in the *Edinburgh Medical Journal.* They are peculiarly remarkable in being edentulous. They are not hairy men in the ordinary acceptation of the term, but more resemble some of the monkey-tribe (the Dianamonkey, Cuxio, &c.); while their edentulous condition carries them yet lower in the animal scale. The eldest is a man aged over fifty-five, Andrian by name, said to be the son of a Russian soldier from the district of Kostromn. He was born during the period of service of his reputed father, and has no resemblance to him, to his mother, or to his brother and sister whom he possesses. To escape the unkindness of his fellow-villagers, Andrian fled to the woods, where he lived in a cave, and was much given to drunkenness; even yet he is said to live chiefly on *sauerkraut* and *schnapps*, but his mental condition, which is truly none of the sharpest, does not seem to have suffered, and he is, on the whole, of a kindly disposition and affectionate to his son and those about him. Andrian was married, and had two children, who died young; one of these was a girl, resembling her father; but of the other, a boy, nothing can be ascertained. Fedor, the boy, exhibited with him, is three years old, and comes from the same village; he is said to be Andrian's son, born in concubinage; and it is most probable that this is the case, as it would be singular were two such creatures to originate independently in one small village. The peculiarity of these individuals is, that they have an excessive growth of hair on one particular part of the body, namely, the face and neck; on the body and lower extremities there is also a stronger growth of hair; and particularly on the back and arms of the child there are sundry patches of ·15 to ·24 inch in diameter, covered with soft yellowish white hair, ·12 to ·24 inch long. Andrian himself has on his body isolated patches strewn, but not thickly, with hair 1½ to 2 inches long. But all this is trifling and subordinate compared with the hair-growth on the face, to which attention is mainly directed. Andrian has only the left eye-tooth in the upper jaw; Virchow has not stated how many teeth are in the lower jaw, but from the context it is improbable that he has more than his son, viz., four incisors. The son has no teeth in the upper jaw, hardly any alveolar process, and the upper lip is very narrow, so that the upper jaw appears depressed; the father presents the same appearance. It is somewhat singular that a similar family has long been known to exist at Ava, and was first described by Crawford in 1829, and since then by Beigel. Three generations of this family are now known to exist. The grandfather Shwe-Maon, had a daughter, Maphoon, and she again a son; all of whom present precisely the same peculiarities as in the family of Andrian, not only as to the growth of hair, but also as to the teeth. The grandfather has in the upper jaw only four incisors, in the lower jaw four incisors and one eye-tooth, and these teeth did not appear till he was twenty years of age. Maphoon has only four incisors in each jaw; the eye-teeth and molars are wholly wanting; the first two incisors appeared during her second year. The peculiarity of the hairiness in these individuals is of the same type as in Andrian and his son, in whom every part of the face and neck, usually only covered with lanugo, is covered with long hair, the very eyelids being so covered, the eyelashes being normal, while flowing locks come out of both nostrils, and also out of the meatus auditorius externus. At first sight, the occurrence of two such families in two such distinct parts of the world seems to point them out as "missing links"—as the unreformed descendants of an earlier race of men. And our thoughts are carried back to the Ainos or hairy Kuriles, who are believed to be the remains of the aborigines of Japan, and who now inhabit the northern parts of the island of Jesso, and the southern part of the island Saghalien. At first these aborigines were stated to be as hairy as our wild men; but from more accurate information, obtained by the Berlin Anthropological Society, through the German resident, Herr Von Brandt, accompanied by numerous photographs and Japanese pictures of these Ainos, and from an examination of a skull recently obtained through Privy Councillor Von Pelican, Virchow is able to state with positiveness, that neither in respect of the formation of hair nor in regard to the teeth, have the Ainos any analogy with the Russian or Burmese hairy men. The Ainos are certainly hairier on the chest and extremities than the nations around them, but there is nothing peculiar in the distribution of hair, and the males have hair only on the typical parts peculiar to man. There is not a shadow of a race-connexion between the Ainos and the Russian hairy men, and only the most prurient imagination could connect the latter with the Burmese family. No doubt, careful breeding could raise a new race of men from this accidental variety, just as various new races of domestic animals, dogs for instance, have been propagated from accidental varieties. Virchow, however, believes that the peculiarities belonging to the Russian as well as to the Burmese families depend upon peculiarities of innervation depending upon accidental congenital abnormalities in the trigeminus, within whose domain all these peculiarities present themselves, only to be ascertained by careful dissection.

SOME OBSERVATIONS ON THE USE OF PHOSPHORUS IN NEURALGIA.

(*Illustrated with Eighteen Cases.*)

By J. Ashburton Thompson, Fellow of the Royal Obstetrical Society, Surgeon-Accoucheur to the Royal Maternity Charity, &c.

(The Practitioner.)

[*Continued from p.* 227.]

Dose of Phosphorus.—The dose of pure phosphorus is stated in the British Pharmacopœia to range from one-thirtieth to one-tenth of a grain. Dr. Radcliffe and Dr. Broadbent (*loc. cit.*) have used the former dose with success; Dr. Anstie with little or none. Dr. Adolphe Waltuch,* in his "Dictionary of Materia Medica and Therapeutics," gives the dose as being from one-twentieth to one-fourth of a grain.

The last quotation alone gives the proper range of dose of this remedy. To prescribe less than one-twentieth of a grain in the first place is to render its therapeutic action apparently variable or uncertain. In some of my earlier cases I am of opinion that recovery was unduly delayed in consequence of the small quantity with which treatment was begun; at least it will be observed that alleviation of the symptoms commenced much sooner in those cases last under my care. I now invariably begin by giving one-twelfth of a grain every four hours, and this I conclude to be an average dose; it has proved itself a perfectly safe and very efficacious one. In only one case will it be observed that any serious symptoms arose which might perhaps be attributed to the remedy, and in this instance one-twelfth of a grain was the quantity prescribed. The symptoms appeared, however, to be in a measure critical, and, since they have on no occasion repeated themselves, may have rather been induced than originated by the medicine employed. On the other hand, Case No. 17 arrived at taking by accident one-fourth of a grain every four hours, and continued to do so for some days, without harm. On consideration, I conclude that to be on the safe side; and, at the same time, to secure the proper therapeutic action of the drug, treatment may commence with one-eighteenth of a grain repeated every four hours, which should be continued for six doses. If there be now only slight or no alleviation of the symptoms, the dose should be increased to one-twelfth of a grain, and continued at similar intervals. After the latter quantity has been taken for forty-eight hours, I am inclined to think that some good may be effected—*i.e.*, if cure have not already resulted — by increasing the dose still further, either in quantity or frequency of administration; but I do not think that any good will be effected by a larger dose of which one-twelfth of a grain has not given decided promise. I have not, however, had a sufficient opportunity of investigating the action of larger doses.

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* A. Waltuch, "Dictionary of Materia Medica and Therapeutics," 1868, p. 247.

Of the Mode of Administration.—The mode of administering pure phosphorus is of the first consideration, for two reasons, the ease with which it alters under exposure to certain bodies, and the extreme nauseousness of the fluid preparations.*

Phosphorus may be dispensed from its solutions in oil, in ether, in chloroform, in spirit; or it may be given enclosed in capsules or pills (Radcliffe, Broadbent); or in loose chemical combination, as in the hypophosphite of soda (Radcliffe, Anstie), or phosphide of zinc. In the course of the experiments alluded to above, conducted in 1868, M. Dujardin Beaumetz † was led to reject the solutions in ether and chloroform, on account of the deleterious effect of the solvent in repeated doses. Spirit he rejected on account of the small quantity dissolved by it—one part in 320, at a specific gravity of ·799. Nevertheless, this is the preparation which I have chiefly used, and I find that with the aid of heat, ten grains of phosphorus dropped into 1,000 drops of absolute alcohol do disappear, and are not again precipitated. M. Beaumetz selected finally oil of sweet almonds as the best solvent. This preparation must either be made into an emulsion, in which form it is extremely nauseous, or it may be enclosed in capsules. These were found, however, to deposit after a time an insoluble, and therefore presumably inactive, form of phosphorus. The means of avoiding this is to employ oil which has been superheated, which will be found to make a clear and stable solution. No doubt if the capsules and pills now obtainable are guaranteed to be made with oil thus prepared, they afford an agreeable and perhaps sufficiently efficient means of administration; but I believe it is conceded that there are often advantages enjoyed by fluid forms of medicine which are either largely diluted in the first place, or which admit of easy and rapid solution in the fluids of the body. The pills as recommended by Dr. Radcliffe are made by heating phosphorus and suet together in a close vessel, in the proportion of one part to 100, making into three-grain pills, and coating with gelatine. The oily solution is a preparation of the French codex (phosphorus 2, oil of sweet almonds 100; dissolve with heat), and of the Prussian (phosphorus 1, oil of sweet almonds 80; dissolve with heat). A French formula for emulsion (Soubeiran) is, phosphorised oil 8, gum arabic 8, peppermint water 100, syrup 60; make an emulsion.

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* Both of these difficulties, I believe, I have succeeded in overcoming. A remark of Dr. Radcliffe's, however, to the effect that the disappearance of phosphoric odour from a solution is presumptive evidence of oxidation of the phosphorus—deters me from stating here the formula for an almost tasteless solution. I hope to be permitted an early opportunity of publishing ten or more additional cases (some of them already successfully treated) in which I am testing this prescription.

† Beaumetz, *Gazette des Hôpitaux*, May 30, 1868; *Journal de Pharm. et Chimie*, 1868, p. 227.

The four successive cases related by Dr. Radcliffe (*loc. cit.*) were treated with the hypophosphite of soda in doses of from seven to ten grains three times a day; and Dr. Anstie has used the same quantity of this remedy in similar cases of nerve-pain, in which he did not find it successful, although he was satisfied with its effects in cases of chronic alcoholism.* It is said to be not unpleasant to take. Phosphide of zinc contains one-fourth of its weight of pure phosphorus; but two parts of the compound must be administered in order to produce the effect of one part of phosphorus. I have no experience of these forms. Dr. Anstie has used pills containing one thirty-third of a grain of phosphorus; these were made according to Dr. Radcliffe's formula; he was dissatisfied with the result. In two cases I used coated pills containing the same quantity, and made by Messrs. Kirby and Co.; they appeared to be without effect, although I gave twice the dose administered by Dr. Anstie, and was afterwards successful with the remedy in other forms. Dr. Broadbent used capsules in his three cases of nervous disorder with good effect.

The discrepancy may now be noted between the results obtained by two competent observers with the hypophosphite of soda used in similar cases. Is this an unstable compound? Again, the results obtained from capsules are opposed to those obtained with pills—which, I believe, are of the same or similar composition. Can any such deposit of insoluble phosphorus have occurred in the pills, such as is indicated by M. Beaumetz?

(*To be continued.*)

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* Reynolds, System of Medicine, art. "Alcoholism."

REVIEWS OF BOOKS.

Transactions of the American Dental Association, 1871-72.

THIS volume consists of reports of the eleventh and twelfth annual meetings of the American Dental Association. The papers are of two classes, one dealing with purely scientific, and the other with what are termed practical subjects. The scientific papers as a rule take very high ground indeed, and when we turn to those under such headings as Dental Physiology, and Pathology and Surgery, we find elaborate dissertations upon the first principles of these sciences instead of that which we have a right to expect from their titles. Here is an extract from the paper on Dental Physiology, which will show the character of some of these contributions :—

> "As regards matter, we are at present only interested in it as it is conditioned for the manifestation of vital actions under the influence of force. Matter, therefore, in its relation to life, may be considered in four different forms.
>
> "By viable matter we mean that which possesses only the potentialities of life ; by living, that which manifests the activities ; and by non-living, that which is neither endowed with the potentialities nor has ever manifested the activities of life ; and by dead matter we mean that which has once lived, but has ceased to manifest the activities, and which no longer possesses the potentialities of viable or living beings."

We cannot wonder that papers of this kind should be followed by discussions of a similar nature, but as the Association, on commencing its proceedings, appointed a committee "to revise and curtail the matter for publication, to the end that irrelevant matter might be excluded," it is with some surprise that we find page after page of such stuff as the following :—

> "Dr. Atkinson — All that has been said has but proved the inability of words to convey concepts. When it comes to philology, I will discuss that in its proper place. I want to get men out of the place in which I once was. Now, physiology is *function*, that is, *work of a body*. I don't care whether you include it in that skin of a word or not. It is *nutrition*. The idea of a *cell* boggles physiologists. They cannot arrive at a concept of what it is. Why, here is this great skin of ours, with the pabulum careering within it. That's a big cell, itself. The feeding, the function—that's physiology. Until the microscope was discovered, we had not the concept of life. 'Hitherto shalt thou come, but no farther,

and here shall thy proud waves be stayed'—was written over the doors of Physiology, but the glorious light of the Father above came streaming down through constructive lenses, and multiplied our conceptive powers. Anything that conspires to support functional activity is the basis of physiological action. Anything that don't do this arrests, deflects, or stops physiological action. It either supports or kills. Will Professor Judd tell me what is '*killed*?'

"Professor Judd—Loss of its potentiality.

"Dr. Atkinson—'*Its*?' What do you mean by '*its*'?

"Professor Judd—Matter that has not only ceased to exhibit the activities of life, but which has lost its potentiality.

"Dr. Atkinson—Because it is not perceptible to a dull mind, shall we say that we cannot understand life? We might spend a whole night trying to find out whether a body is frozen or dead, and we would not find out; but the first blush of congestion would reveal it to us. We have not yet risen to the conception that matter must be living to be at all. Plasma is chaos. Physiology is the properly taking in of plasmatic mass that feeds the body. Vitality is simply manifestation. We don't know what life is. We do know what death is. It is change of habitat of ghost. I wish we had some senate or house of bishops to tabulate these concepts. The law of togetherness and apartness is the most primal concept of life. Hence a crystal belongs as legitimately to the sphere of life as any seraph that blazes before the throne. They have often laughed at my expression "from silex to seraph," 'from seraph to silex,' but it's true, nevertheless. As we are upon Dental Physiology, we make the assertion that the enamel of the dentine is the only thing that cannot be reproduced. All the rest that have not been given up to the infiltration of the lime salts may be reproduced. The law of ancestral longevity comes in here —the perduring of inherited strength. I know that bone and nerves can be reproduced. This can be demonstrated to stone-fence minds. These tissues can be supplanted, as in the case of tuberculosis, which generates soft bodies in itself, taking the place of the tissues themselves by substitution. I had a case which came under my observation. Professor Day, of Yale College, who was pronounced consumptive at fifteen years of age. He was elected to the pastorate of a Presbyterian church, but was so feeble he had to go away. He met with a man, who, though called a quack, clearly saw that the pabulum must be supplied on which the tissues might feed. He took the case in hand, and treated it on this principle—the supply of pabulum (food)—and the tubercles became partly encysted, partly expelled, and the professor recovered, when at thirty-five years of age his case was thought to be a hopeless one. Some of you may think me a fit subject for a lunatic asylum because I say a crystal thinks. Thinks about what? you say. About what it wants to take in as necessary to its own existence. Here we have the key that unlocks the whole, and there's not a dog in all the holy mountain to wag his tongue against this eternal truth. I am thankful for that report, and bless God that my good brother Judd has been inspired to that extent. I only wish that the angels had brought him up a little higher. However, as we go against the hosts of darkness, let us be careful lest we be found battling against the living God."

That such transcendental nonsense should find a place in these Transactions is the more astonishing when we find that a considerable number of really scientific men were present at the meetings who did not fail to point out the absurdity of such utterances. Here is an extract from the discussion on Pathology and Surgery at the 1872 meeting:—

"Dr. Atkinson—I have no personal ambition to subserve in this matter, but I wish to set myself right on several points. Professor Judd charges, with great unfairness, upon me that I deal in *consciousness*, he in *facts*. I would like to know how you get facts without consciousness? I force myself to a depth of humility that can be reached by no physicist. He says that the *acarus scabiei* goes in and *produces* the vesicle! My God! what immense perception must he have to keep on saying that. The effect is produced by the physiological function of the part, and the divergency of function is produced by what produces the vesicle. Now, if you throw away your books, and "go for it," we won't have polemics, but the question will be who can perform his work the best. As it is, the physicist and spiritualist are always bandying words, and it is because of this that truth has tarried. They don't see what a dreadful thing it is to have functional derangement. He don't know anything, and W. H. Atkinson has the hardihood or the humility to say that all knowledge comes by *inspiration*. And now, I ask, did the acarus produce the vesicle as a cause, or was it only the occasion of its production?

"Dr. M'Quillen—I have listened with satisfaction to the paper, and to the response, and in reference to investigations, I would say that we find our reasoning either inductive or deductive—either according to Plato or Aristotle. For myself, I consider that of Bacon the safest, to take facts, and draw deductions from these.

"I do not agree with a preceding speaker that all knowledge came from the inner consciousness of man, independent of schools and instructors.

"The erroneous views of nature held by primitive man were notorious, and it was only after succeeding generations had revised and re-revised these opinions and beliefs that a tolerable approximation to truth was attained. A child with an intellect ever so bright, on reaching maturity without pupilage, would be unfitted to grapple with the great problems of nature and of thought. He must submit to teachers, and avail himself of all the helps thrown in his way. In the arts, in science and letters, men must first be apprentices, and then workmen, before they can expect to be masters. The unwillingness to submit to the full period of apprenticeship was the reason why there were so few masters and so many pretenders in every department of science and art.

"Dr. Atkinson—Answer me, what was in the mind of Columbus when he conceived the idea of the New World?

"Dr. M'Quillen—He was not the first to conceive the idea. His views were the crystallization of ages. Long before the steam-engine was invented, a preliminary train of investigation and observation had been leading up to it. It has been said that when an Englishman wishes to know anything concerning an animal, he goes to the Zoological Gardens, and observes its habits; the Frenchman goes to its native country; but the German shuts himself up in his inner consciousness. If there is one man who more than another expresses himself without dogmatic assertions, it is the truly scientific man. His statements are always made after this manner:—'I have observed such facts and I draw such inferences.' That's what I like about our friend, Professor Judd. The truly scientific man is always careful, for he knows the observations of to-morrow may set at nought and revolutionize the theories of to-day. If he pronounces himself dogmatically, he has committed himself, and he must either acknowledge himself in error when his theories are proved untenable, or say, with the Irishman, when told that the facts were against him, 'so much the worse for the facts.'"

When the Society descends from these heights to every-day topics of practice we find an entire change in the character of the discussions, which are interesting and eminently practical, although they contain but little that would prove novel to the English reader. Among the subjects which, however, have not recently been brought forward in this country is that of bleaching teeth discoloured by decomposition of the pulp or of metallic fillings. Dr. Sage describes a method of performing this operation by means of chlorine, and describes an apparatus for passing a stream of this gas through the tooth without allowing the poisonous fumes to be inhaled by the patient. Altogether this volume shows that some of the members of the American Dental Association are engaged in, and capable of doing, good scientific professional work, and determined to keep themselves to the front in improvement. It is to be regretted that this volume should have been marred by the insertion of valueless and absurd utterances such as we have quoted, and which only serve to show how incompetent were the speakers, from knowledge or training, to deal with such subjects.

Dental Surgery and the Public. By AN OLD PRACTITIONER and L.D.S. (London: J. and A. Churchill.)

"SAVE us from our friends!" will be the first remark which rushes to the lips of the educated members of our profession who happen to look through this pamphlet. We may, however, at once offer consolation to those who anticipate any mischievous result from this ill-advised publication, by assuring them that it is certain not to be read by the public to whom it is addressed. It cannot successfully compete with the numerous "popular" works on dentistry having much more attractive titles, and which are not only extensively advertised in the newspapers, but also gratuitously circulated in hundreds by post. That portion of the public to whom it would unquestionably be advantageous to impart information such as the well-intentioned, anonymous author of this pamphlet desires to give, are unable to discriminate between such honest publications and others whose sole object is to advertise under cover of a pseudo-scientific treatise, the name and address of a charlatan. The objects which the author has in view are "to give a *clear* statement of the present position of dentistry in England."—"To furnish a species of guide to the selection of a dentist."—"To make suggestions as to the remedy to be applied to the present unsatisfactory condition of dentistry as a profession." We have marked the word "clear" in the first-quoted sentence, firstly, because the author actually confesses immediately before this that he is aware he has not made himself "clear" ("owing to inexperience in literary pursuits"); and, secondly, because it is for the reason that he is evidently incapable of making himself understood, that we especially object to the publication of his pamphlet. Nor is it to mere vagueness of expression alone that we have to object; it is a disregard for the common rules of grammar. Let us, for the author's benefit, here quote and attempt to parse the first sentence of his preface, which runs as follows:—

> "The following pages appeared in the columns of a journal devoted to the interests of the Dental profession through the courtesy of the editor, who permitted their insertion without sharing the sentiments of the author in all respects, but differing with him rather, it is fair to say, on certain points, in order that the opinion of others in the profession might be elicited."

The meaning of this sentence, grammatically construed, is that the pages appeared in a journal; that this journal is devoted to the interests of the profession through the courtesy of the editor; that the editor permitted their insertion without sharing the sentiments of the author; and that the editor differed, it is fair to say, on certain points, in order that the opinion of others in the profession might be elicited. No further illustration, we feel sure, need be given to show that the writer, who is capable of deliberately allowing a sentence like that to appear in print, has miscalculated his strength in putting himself forward as the champion and vindicator of our profession. Abundant proof exists that educated English dentists of the present day are not more ignorant of their mother tongue than the members of kindred professions; and if he who puts himself forth as their mouthpiece, show himself illiterate, he tends to injure rather than improve their position. We will not follow the author through his arguments; they are just as vague as his language is obscure, and this is not surprising when we consider that the connection which exists between thoughts and the words in which they are clothed is so close, that when a writer expresses himself badly, the defects of his style can be almost invariably traced back to his indistinct conception of the subject, the treatment of which he has undertaken. This pamphlet is altogether worthless, but we are happy to think it will prove harmless.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, NOV. 3, 1873.

ISAAC SHEFFIELD, Esq., President, in the Chair.

Dr. CHANCE brought before the notice of the Society a set of gold-pointed pluggers, smooth-faced, made of fourteen-carat gold. Dr. Chance claimed for this invention greater facility in working adhesive gold.

Mr. SERCOMBE said that he had tried them, and found them work very satisfactorily.

Mr. MUMMERY presented a specimen for the museum—a lower jaw of a sheep having a Dental Cyst.

Mr. CHARTERS WHITE presented some microscopical slides showing sections of the gums in a pathological condition.

Mr. OAKLEY COLES brought before the notice of the Society a specimen of Thymolized Cloth for the treatment of periosteal inflammation.

Mr. FOX presented a specimen of Salivary Calculus of unusual size that had been removed from the mouth of a patient by Mr.

Marsh. The case occurred in the practice of Messrs. Steward and Greenfield.

Mr. Fairlie Clarke then read a paper upon "The Influence of the Teeth on Tongue Disease." The author, after making some remarks upon the anatomical relations between the tongue and the teeth, explained how he should treat the subject. Passing over the injuries which are often inflicted on the tongue by accidents, or during epileptic fits, or tetanus, as scarcely coming under the notice of the dentist, he said he should confine himself to two main classes of tongue disease—(1) the ulcerative, and (2) the cancerous.

Under the first division the writer explained the distinguishing characters of aphthous, dyspeptic, and syphilitic ulcers, pointing out how far each might be determined or aggravated by a faulty condition of the teeth; and then he enlarged upon the treatment suitable to each case, with special reference to the aid which might be derived from the dentist either by taking away carious teeth altogether, by filing them down, or by filling them up.

Under the second head, Mr. Fairlie Clarke gave some statistics to show the frequency and the fatality of cancer of the tongue. He then sketched the features of a typical case, and pointed out the great importance of an early diagnosis. He advised that any rough or irregular teeth that might be irritating the sore should at once be removed, that artificial teeth should be laid aside for a time, and that everything should be done to give the organ rest.

The writer alluded briefly to some other rare tongue diseases which are sometimes occasioned by a bad state of the teeth; but his paper was chiefly occupied with the ulcers and with cancer as being both the most common and the most important.

DENTAL STUDENTS' SOCIETY, 32 SOHO SQUARE.

TWELFTH ORDINARY MEETING, OCTOBER 20th, 1873.

Thomas Underwood, Esq., President, in the Chair.

Mr. Frederick Canton exhibited a model showing the great loosening that had taken place, of the left upper central and lateral incisors in consequence of an elastic band, which had been used in order to approximate them, having been left in the mouth, and gradually burrowing beneath the gum, had so caused the loosening of the teeth.

Mr. Frederick Canton also read the following notes of a very interesting case, apparently of hysterical paralysis, that had lately come beneath his notice:—

Mr. President and Gentlemen,—I wish to bring before you this evening the particulars of a case which I think of some interest. I propose reading the notes as sent me by the medical man who brought the case to my father, and then stating my own opinion of it, and the reasons for such.

"Miss X——, aged 16½ years, tall, slender, dark eyes, long eyelashes, good tempered, vivacious. Has never been considered strong, indeed, always 'out of one illness into another.' Commenced to menstruate at 13, since which time she has suffered from menorrhagia. About eighteen months ago had rheumatism while in a convent in Belgium, and was ill for about three months at that time. Came to England about four months ago (October, 1872) in fairly good health. Went with some friends on November 9th, 1872, to see the Lord-Mayor's show. To use their expression, she 'fainted away' three times. On recovering consciousness after the third attack, it was found that her right arm and leg were paralysed. On November 11th she was seen by Dr. N—— at the school where she was then staying. Her complaint was that she could not use her arm or hand, and that her leg would not support the weight of her body. There was no facial distortion, no difference in the size of the pupils, no deviation of the tongue either on protrusion or withdrawing. She could not move her right arm across the chest, nor could she flex the fingers at all. She could not tell when the fingers were touched, nor feel a hard pinch. The thoracic muscles were insensible to touch, although the movements of respiration were regularly and equally performed. The thigh on both outer and inner aspects, the leg, and foot, were 'as if they did not belong to her,' and she did not feel the tickling the sole of the right foot, although painfully alive to the slightest touch on the left side. The treatment adopted by Dr. N—— was a combination of iron and bromide of potassium, under which she certainly improved in her general appearance; but no improvement took place in the local symptoms. She complained a good deal of being swollen all over, and her cheeks were certainly very puffy. Kidneys acted very freely; no albumen in urine. Her teeth were very faulty, and one molar tooth on the right side, lower jaw, gave her considerable pain, so much so that her mother, who had arrived from the Continent, wished a dentist to stop the tooth. Dr. N—— offered no objection, but suggested that it was impossible that a dentist would do anything in her then condition. However, the tooth was stopped, and about three hours afterwards she was seized with a most violent paroxysm of agony, in which she threw herself about so much that three people could scarcely hold her down. When the stopping was removed the pain became less, and to her surprise she could use both her right hand and leg, and got out of bed herself and sat in an arm-chair. From this time (November 25th) she steadily improved, and went about with her mother. Dr. N—— suggested her return to the Continent, and the departure was fixed for December 4th. On the evening of December 3rd, during the whole of which day she had been very much excited about going home, she had another 'fainting fit,' and again the paralysis of the right arm and leg was present. The next day she was better, but could scarcely walk even when supported. December 5th, Dr. N—— took her to Mr. Canton to consult about the advisability of extracting a molar tooth. Whilst seated in the chair she went off into a state of apparent unconsciousness, her right arm being jerked up and very forcibly flexed at the elbow-joint, perpetually, whilst the right leg was violently stretched out. This attack lasted about ten minutes, during which the colour never left her lips, nor did her pulse fail. She gradually became able to be moved, and went back to a friend's house in the neighbourhood of Great Marlborough Street. She was so much better on the 6th, that on December 7th we determined to administer nitrous oxide gas, and extract the tooth; and accordingly, when Mr. F. Canton had brought her under the influence of the gas, Mr. Canton extracted the tooth successfully. When she recovered consciousness, she was again unable to move right arm and leg, but towards evening her power was markedly stronger. On December 14th she again took the gas, and an upper canine tooth was extracted ; this time no paralysis occurring after the administration of the gas. Noticing that her digestion was faulty, Dr. N—— left off iron, &c., about the beginning of December, and substituted potash and bismuth, reverting to iron when she was sufficiently recovered to digest it. From December 14th, with the exception of irregular menstruation and leucorrhœa, no point of interest presented itself in the case."

The doctor in writing to me says : "I have omitted to mention that rather a celebrated physician saw Miss X—— with me, and thought it a case of embolism, but the subsequent history, I think, sets that opinion aside."

My own opinion of this case is, that it is a case of pure hysterical paralysis, and I will now give my reasons for thinking so.

In the first place her age, being very tall and generally in ill-health, the uterus not performing its functions properly, all these make her a likely subject for hysteria. Secondly, taking the history of the case from the beginning, we find she first of all "fainted away three times." Now, that does not look like embolism or apoplexy, from either of which she would not have come to and then gone off again immediately. Then "there was no facial distortion, no difference in the size of the pupils, no deviations of the tongue either on protrusion or withdrawing." Again, "the thoracic muscles were insensible to touch, but the movements of respiration were regularly and equally performed." All this does not look like genuine paralysis.

We find "she complained a good deal of being swollen all over." That seems to me very like an hysterical complaint.

Further on in the history we find she complained of a tooth paining her ; the tooth was stopped, and three hours afterwards she was seized with a most violent paroxysm of agony, in which she threw herself about so much that three people could scarcely hold her. When the stopping was removed the pain became less, and to her surprise she could use both her right hand and leg. Now here I do not attribute the recovery of the use of the arm and leg to the removal of the stopping, but to the "spell," so to speak, having been broken. When she had the paroxysm of agony, she threw herself about so that three people could scarcely hold her ; during this she must have used both the right hand and leg ; now it is a well-known fact, that if you can get hysterical patients to use whatever member of the body is paralysed, *once*, they will use it afterwards ; in fact, you cure them.

I will here mention a case which I perfectly remember occurring at St. George's Hospital. A girl was admitted complaining of being unable to use either of her legs, and if you tried to make her stand she invariably fell down precisely as if both legs were paralysed. No cause could be found for paralysis, and it was decided to be a case of hysteria ; the treatment ordered was a cold shower-bath every morning. The very first morning she jumped right out of the bath, cured. Next in the history we find, after a day of much excitement, she had another "fainting fit," and the paralysis returns ; the next day she is better, and a consultation is held as to the advisability of the removal of a tooth. During the consultation she goes off into a "state of apparent unconsciousness, the right arm being *flexed* and the leg *extended*." Now, it is not *very* often that the flexors of one limb and extensors of another are affected at the same time in paralysis. During the attack "the colour did not leave her lips nor the pulse fail;" both of which strongly point, I think, to hysteria. I have brought this case before the Society, as I think there are one or two points of interest in it; there is no doubt that after the extraction of the first tooth the paralysis did gradually leave, beginning to do so the very same evening, but whether that tooth or any other was the cause of it I am not prepared to say, but think not, although there does seem to be some connection between them.

I think that the menorrhagia should not be lost sight of; the question occurs to me, would any paralysis have taken place had the uterus been performing its functions naturally, there being nothing unusual about the tooth itself more than decay (no exostosis or anything of that kind); more especially as there was some, if not a good deal of, hysteria about this patient; and this we know is often associated with uterine disorder. Is it not possible the hysteria in this particular case took the form of paralysis, as it will of almost anything?

I may mention that my father remembers two cases in which immediately after the extraction of a tooth the lady complained of intense pain in the lower part of the back, but of none in the socket of the tooth.

Mr. Sercombe (I see by Mr. Tomes' book) has recorded a case of obstinate leucorrhœa and uterine pain cured by the extraction of a tooth; touching the tooth with a probe, and its subsequent extraction, brought on most acute paroxysms of uterine pain.

There are several cases on record in which the *arm* has been paralysed in connection with the teeth; but I know of no case in which the *arm* and *leg* both have been so.

On January 1st, 1873 (a fortnight after the second extraction, and three weeks after the first), she was able to walk easily by herself, and came and called on me. I saw her continually until the 17th, when she returned to Belgium; she then looked and said she felt perfectly well.

In answer to Mr. Bennett, Mr. Canton said he knew of no other case of paralysis in the family.

Mr. WOODHOUSE inquired if, after the removal of the tooth, the state of the pulp had been examined.

Mr. CANTON said it had not, beyond ascertaining that it was exposed.

Mr. UNDERWOOD agreed with Mr. Canton in considering the case one of hysterical paralysis, and pointed out the great interest of these cases, and also the necessity of very close observation of them.

After some discussion, in which various members took part, this interesting subject was dropped.

A paper was then read by Mr. WILLIS on "Dentistry and the Dental Profession from a Student's Point of View."

ORDINARY MEETING, NOV. 10TH, 1873.

FREDERICK CANTON, Esq., Treasurer, in the Chair.

MR. W. C. BENNETT exhibited a model of the mouth of a child twelve years old, in which there were four central incisors and three lateral incisors; shortly after the removal of one of the latter a fourth made its appearance.

Mr. Willis showed some very marked and curious cases of exostosed teeth, also some instruments lent by Mr. Rutterford.

A paper was then read by Mr. F. Canton on Dyspepsia in connection with Diseases of the Teeth.

Mr. President and Gentlemen,—In compliance with a request made to me to read a paper this evening, I do so with some hesitation, for I feel that on the subject upon which I am about to speak I may not be able to offer anything that is new to you; but adopting the suggestion made by Mr. Willis at the last meeting, in turn come forward to do my little towards furnishing materials for an evening's discussion, trusting sincerely that others will follow suit.

I have taken for my subject, "Dyspepsia in connection with the Loss of Teeth." This train of thought has been suggested to me by two cases which have lately come under my notice, the characteristic features of both patients—who came upon the advice of different medical men—being entirely diverse in many respects: the one a gentleman advanced in life, and almost edentulous; the other, of the opposite sex, young, and having lost but three teeth; both suffering from the same complaint, dyspepsia, the cause in both instances having its origin from the same sources.

By "dyspepsia" we understand "difficult of digestion;" and digestion is performed, speaking generally, by the teeth, saliva, and gastric juices of the stomach. Now, anything interfering with the functions of any one of these three must of necessity involve more or less difficulty of digestion—in other words, dyspepsia; but as our province is only with the two former, I shall make no remarks concerning the last. And let me here say that many of those which I shall make are necessarily taken from various works on the subject.

If, as I have just said, the teeth and saliva perform part of the process of digestion, it follows that the more the food is masticated, and the longer it is retained in the mouth, the better can the saliva act on it, and so prepare it before entering the stomach; and anything which interferes with this process will in all probability cause a certain amount of "dyspepsia." Now among these causes may be mentioned, as most prominent, the loss of teeth.

All these, I am perfectly well aware, are undisputed facts, as old as the hills; still, I have brought them before you to-night because I consider them to be of vital importance, and facts which cannot be too often borne in mind, as they are, in my opinion, so frequently overlooked by general practitioners.

How many people there are that suffer from some form of chronic dyspepsia, and are obliged, in order to get relief at all, to take Cayenne pills, bismuth powders, or some other medicinal digestive, regularly before or after every meal! What I think is, that many of these unfortunate sufferers might not only be relieved from time to time, but be absolutely cured, by the use of artificial teeth, if it did but occur to the medical man in attendance to recommend them; for so far as my own experience goes, it never seems to occur to patients that they are really suffering from the want of proper powers of mastication, and even when pointed out, if they have but one or two teeth in their jaws, it is difficult to convince them of the fact.

Some time ago I was acting as assistant to a medical man in the country, and I can now call to mind a large number of cases of dyspepsia which came under my notice in both the lower and upper classes of life. In the former it was usual to attribute it to excessive teadrinking, especially in old women, or something else of the kind; and in the latter, to a variety of causes too numerous to name. Different drugs were prescribed, and taken with varying effect; but I now feel convinced that a large number of these were in all probability owing to the loss of teeth, but in no case did I hear of the gentleman to whom I was assistant recommending artificial teeth; nor, so far as I can see, did the idea seem to strike him—and I must confess, it certainly at that time did not strike me—although the majority of cases were decidedly not cured, but continued taking regularly whatever was prescribed for them, and were to a certain extent relieved.

Understand me, I do not wish to find fault with the gentleman I was with, of whom I have the highest opinion, or with any other medical man; I merely mean, that curing their patients (when other ways have failed) by artificial teeth does not seem to occur to them; and I think in many cases they would effect a cure if it did, receiving the gratitude of their patients for having pointed out the true cause of their suffering.

Dyspepsia, as we know, shows itself in a variety of different forms. It may appear as an eruption on the skin, pain in the region of the stomach, heart-burn, water-brush, &c. I would suggest that in all cases where the cause is doubtful, an examination of the mouth should be made as to the deficiency of teeth.

My object in bringing this subject before you is not merely to show that impaired digestion follows as a consequence of the entire or almost entire loss of teeth, which is, of course, a well-known fact, as to suggest that the loss even of a few may be, and often is, followed by the same complaint.

I will here relate the cases to which I alluded at the commencement of my remarks, and show the models in illustration.

This, the first and elder patient, came to me a confirmed dyspeptic, having been under treatment a considerable time, and having just left Harrogate after trying the waters with, if anything, an ill effect. He came, on the recommendation of his medical adviser, to try as a last resource the use of artificial teeth; his health at this time was so bad that he was about to start for the sea-side to try what change of air would do for him. I accordingly made him, as you will see by these models, a complete upper and lower set, with the exception of these two remaining teeth in the lower jaw. They were inserted on the 13th of last month (October), and on the 27th he informed me he felt so much better that he had abandoned the idea of leaving town; and this he attributed not so much to his powers of mastication, which were necessarily then limited, as to the increased flow of saliva caused by the pressure of the plates.

The idea which here occurs to me, and upon which I should be glad to hear the opinions of the meeting, is, whether the salivary glands act as copiously in old age as in earlier life. I have no recollection of seeing in any works I have read allusion confirming or not this theory.

My second case is one which differs materially from the first; it is of a young lady who had lost, as you will perceive, the two bicuspids on the left side, and one molar tooth on the right. A peculiarity in her case, in addition to the ordinary dyspeptic symptoms, was an almost perpetual blinking of both eyelids, being, I should conclude, merely one of the many forms in which dyspepsia manifests itself; and in this I am confirmed by the medical man on whose recommendation she came.

Since commencing this paper a third case has come under my notice which I will shortly relate, as I think it typical of a large number of middle-aged people, and also will make a good intermediate illustration between the two I have already mentioned. It is that of a gentleman to whom his medical adviser had made the remark that "he could do *something* for him, but his dentist could do a great deal more." He came to me and told me he continually suffered from indigestion, and described all the usual symptoms; he himself attributed it to his want of the powers of mastication. You will see by these models that he has merely lost some of his back teeth, but lost them so that those which remain are perfectly useless for the process of mastication; consequently all the work is done, and done imperfectly, by the front teeth. In a case like this it seems very probable to me that owing to the food during mastication being kept to the front of the mouth, the parotid glands would not receive so much stimulus as when it is between the molar teeth, and consequently would not act so copiously. And knowing that the composition of the salivary glands is not entirely the same, I think a large gland like the parotid not acting as it should might make a difference, although small, in the process of digestion.

As one of the objects of my paper is to try and show the importance of the saliva as well as the teeth in the process of digestion, I propose now saying a few words concerning it.

One of its chief uses seems to be that of converting the starch in food into grape-sugar, and the importance of this is apparent when one reflects that starch is insoluble and useless as nutriment, while sugar is highly soluble.

Another and important use is that of mixing with and enveloping the food, so that it becomes an emulsion which glides easily through the fauces and œsophagus. During fasting the saliva, although secreted alkaline, becomes shortly neutral, and it does so especially when secreted slowly and allowed to mix with the acid mucus of the mouth, by which its alkaline reaction is neutralized.

The substance in the composition of the saliva which seems to have the peculiar property of turning starch into sugar is a nitrogenous one, called ptyaline.

The absolute action of the saliva on food, in a chemical point of view, is not at present, I believe, thoroughly understood, but when one considers the number of glands—viz., parotid, sublingual, submaxillary, and numerous small ones situated beneath the mucous membranes of the various parts of the mouth—and the size of the first-named, also the variety of the substances entering into its composition—among which may be named water, ptyoline, mucus, albumen, fatty matters, &c.—one can hardly imagine it is only intended for mechanical purposes.

I think that the one substance, starch, alone is sufficient to cause dyspepsia if not converted into sugar, although a moderate surplus of it is almost indifferent to a *healthy* digestion, if not absolutely useful by the mechanical stimulus it affords. One thing, I believe, is pretty certain, and that is that much of the starch which the digestive juices fail to render soluble and to absorb in the form of sugar, escapes all metamorphosis whatever.

But on the other hand, many varieties of dyspepsia indicate that it is so far an office of the healthy digestive juices to restrict the changes of the warm and moist starch contained in the alimentary canal, as that their insufficient quantity or depraved quality permits a larger formation of lactic acid.

All this points, I think, to the importance of the saliva in the process of digestion, as this alone seems to have the greatest power of converting starch into sugar; the only other secretion in the body which has this effect is that from the pancreas and the glands of Brunner, but these, I believe, have not the same rapid action.

I have made these remarks as I think they bear strongly on the subject before us, for persons who are edentulous cannot, in my opinion, and I am confirmed by one or two patients, retain the food in the mouth long enough for the saliva to act on it properly, much less can they masticate it; and in those cases where there are only a few teeth remaining, it is not possible to masticate the food sufficiently for the saliva to act on it as thoroughly as it should, and as necessary for the proper amount of starch to be converted into grape-sugar.

Before bringing this to a conclusion I should much like to mention a case bearing on this subject, the particulars of which were given me by my uncle, Mr. Edwin Canton, of Charing Cross Hospital; they are shortly these:—

A lady sent her servant to him, her complaint being that she often felt a dull, heavy, aching pain on the inner side of the ankle. This occurred almost every day long before her work was finished. My uncle finding no causes for this pain locally, questioned her regarding her digestion, and then found she was suffering from many of the ordinary symptoms of dyspepsia, and on examining the mouth, found a dreadful state of affairs. She had lost most of her teeth, and those that remained were in a fearful state of decay, so that mastication was utterly impossible. Being only a servant, and not blessed with too much brain, he had, as you can easily imagine, some difficulty in making her believe that pain at one extremity of the body was to be cured by attention to the other. However, after some time he did succeed in persuading her to have some teeth made, and from that time to this she has never had a return of the pain.

And now, gentlemen, I must apologise to you for the shortness of this paper, and also, I fear, for the imperfect nature of it, but I have really been unable to give the time to it which I should like to have done; nor have I been able to make many references which I should have done; therefore I trust you will make all allowance for its shortcomings. I thank you for your attention, and shall be happy to answer any question in my power.

Dr. Chance said that his own experience fully endorsed that of Mr. Canton. Had himself known the case of a lady, aged forty-six, who suffered much from dyspepsia, her doctors giving her up as hopeless; she had been perfectly restored to health after wearing artificial teeth, which she greatly needed.

Mr. Willis had known cases where, if not life itself, all the comforts of life had been restored. Did not agree with Mr. Canton respecting doctor's opinion with regard to dyspeptic patients; thought doctors could not in any way escape blame if they overlooked this cause of indigestion. Wished to know if the increased flow of saliva continued after the putting in of an artificial piece. Knew the case of a lady who, year after year, had a miscarriage. It having been suggested that her teeth should be examined, they were found in a very bad condition; were set in perfect order; lady is now the happy mother of seven or eight children.

Mr. Hepburn said that where there was only partial loss of teeth it reacted secondarily on the remaining teeth, from the mucous membrane being unhealthy in character; the unhealthy gum would again act on saliva and cause the deposition of tartar. Said that the teeth act when standing as a continual irritant, and if removed this cause no longer exists; so it is probable that the mouths of old people are less moist than those of younger persons.

Mr. **Willis** said that where there was actual loss of one tooth there was practically loss of two teeth, and this was seen in the loosening of an antagonising tooth.

Mr. **Bennett** reminded Mr. Willis that this could not take place in the front of the mouth, as there each tooth came in contact with two.

Dr. **Chance** considered artificial teeth the last recourse of the dentist. Americans look on mechanical dentistry as secondary to surgical. Students should especially seek perfection in this latter branch.

Mr. **Tyrrell** said that he did not lay so much stress on the amount of saliva, as it was secreted in proportion to the kind of food; and the pancreas was thought in some measure to compensate. Considered it most important that artificial teeth should be made thoroughly useful to wearer, having plenty of masticating power.

Mr. **Canton** then replied.

Mr. **Oakley Coles**, after a few concluding remarks, proposed a vote of thanks to Mr. Canton for his paper.

Mr. **David Hepburn** seconded the proposal. The meeting was then brought to a close, and the next meeting announced for Monday, 8th December.

HOSPITAL REPORTS.

DENTAL HOSPITAL OF LONDON.

Cases Treated from Sept. 1 to 30, 1873.

Extractions: Children under 14	483
Adults	519
Under nitrous oxide	120
Gold stoppings	74
White foil ditto	44
Plastic ditto	77
Irregularities of the Teeth treated surgically and mechanically	27
Miscellaneous cases	200
Advice cases	69
Total	1,613

OCTOBER 1 TO 31.

Extractions: Children under 14	365
Adults	560
Under nitrous oxide	121
Gold stoppings	69
White foil ditto	47
Plastic ditto	109
Irregularities of the Teeth treated surgically and mechanically	40
Miscellaneous cases	220
Advice cases	28
Total	1,559

CLAUDE ROGERS, *House-Surgeon.*

HOSPITAL SUNDAY AT LIVERPOOL.—The amount received by the Liverpool Dental Hospital from this Fund was £48.

CORRESPONDENCE.

A CASE OF REAL DISTRESS.

To the Editor of the MONTHLY REVIEW OF DENTAL SURGERY.

SIR,—Will you allow me, through the medium of your columns, to call attention to a case of real distress with which I am personally acquainted. It is that of the widow of a surgeon-dentist, left with a family of five children totally unprovided for. She has now the prospect of being able to establish a school, but unless she can have a little assistance till pupils can be procured, she will be compelled to give up her house, and so abandon all chance of keeping a home for herself and children. The eldest of these children is now only sixteen years of age, and I know well how perseveringly their widowed mother has struggled since her sad bereavement to provide for them and herself. I shall be most happy to give further particulars of this sad case to any who may apply to my address; and also to give full details of the school which she wishes to establish, and for which she is most admirably qualified.

Subscriptions will be most gladly received and thankfully acknowledged by myself, at 9 Belsize Park, South Hampstead, and by Miss Rebet, Acacia Lodge, Witney, Oxon.

With many apologies for trespassing on your valuable space,
I am, Sir, yours truly, E. M. REDPATH.

9 Belsize Park, N.W.

LIST OF SUBSCRIBERS.

Edwin Saunders, Esq.	£5 5 0

To the Editor of the MONTHLY REVIEW OF DENTAL SURGERY.

SIR,—Will you allow me, through your Journal, to correct an error concerning myself which appears in the last number of the Odontological Society's Transactions. I sent models to illustrate a method of setting the bite, which overcomes the displacement that occurs from the swelling of the fresh plaster back. The short description sent with the models was not read, or the mistake could not have arisen; such mistake being that the name of the tile maker was given in the report, as the exhibitor of the models, whereas I gave his name and address to complete the communication. I have used the plan for some months with satisfaction, and think it a pity that however trifling the transfer of idea may be, it should miss its mark.

Yours very truly, CHARLES ROGERS.

Cork Street, November 3.

LAW INTELLIGENCE.

MOSELY *v.* WILLIAMS.

(ECHO.)

AT the Brentford County Court yesterday afternoon, a singular case was tried before Mr. Serjeant Wheeler and a jury. It was an action brought by Lewis Mosely, Simeon Mosely, and Frederick Solomon Mosely, dentists, carrying on business at Berners Street, Oxford Street, and in the Strand, against Mr. Charles Williams, a City clerk, of Pope's grove, Twickenham, to recover the sum of £52 10s., which sum had been reduced to £50 (to bring it within the jurisdiction of the court), for artificial teeth and dentistry attendance. The following is a copy of the items, viz. :—January 18, 1873, extracting teeth, £2 2s.; temporary case, £3 3s. April 17, twelve artificial teeth, at 42s., £25 4s.; 15th and 28th February, stopping teeth with gold, two and a half hours (Miss Williams), £5 5s. 28th February, artificial teeth, eight at 42s., £16 16s.; total, £52 10s. The sum of £25 had been paid into court by defendant, but refused.

The jury, after a few moments, returned a verdict for the defendant, satisfied that the £25 paid into court was amply sufficient. Cost of witnesses allowed.

To Correspondents.

ALL communications intended for the Editor should be addressed to the care of Messrs. SMITH, ELDER, & Co., 15 Waterloo Place, Pall Mall.

All inquiries respecting Advertisements and Subscriptions should be sent to GEORGE BUTCHER, 4, Crane Court, Fleet Street, E.C.

THE MONTHLY REVIEW

OF

DENTAL SURGERY.

No. VII. DECEMBER, 1873. Vol. II.

DENTAL SURGERY.

Oral Surgery, as an extension of the practice of dental surgery, is apparently not succeeding very well in the United States; nor is dental surgery proper, making that progress in the estimation of the medical Press that we could wish. The journals there take almost the same view of the matter as the medical Press of this country, though the *Philadelphia Medical Times* has argued the question of the proper position of dentists with more fairness and consideration than has been shown by some of our own contemporizers.

In a leading article which appeared in the *Philadelphia Medical Times* for November 1st, we find the following remarks:—

> "The question then is, Is oral surgery sufficiently distinct and of sufficient magnitude to be worthy of rank as a specialty?
>
> "In considering this, it seems to us of vital importance that we recognise the true position of *dentistry* and of *dentists.*
>
> "Argue and reason as we will, laud dentistry to the skies, or degrade it to lowest rank, the fact remains, that the great bulk of the work to be done is purely mechanical; that whilst a few practitioners, like our friend Dr. Garretson, may climb from tooth-plugging and tooth-pulling to the performance of the most serious operations, involving life itself—from being skilful dentists to being as skilful surgeons—the great bulk of the profession must spend their lives in a monotonous round of purely mechanical labour, labour in which mechanical and artistic skill, along with personal qualities, are the sole guarantees of success.
>
> "The higher education, the wider culture of the physician, though it may contribute, is in no sense a necessity, to such success; and just so long as this is true, so long will a very large proportion of dentists neglect that culture which, whilst it may be an ornament, is not a necessity for the practice of their profession. Here,

it seems to us, the matter rests. Dentists—we mean the general mass—have at present no claims to be recognised as representatives of a branch of our profession; many dentists are doctors, some of them are 'oral surgeons,' and as such we receive them into the brotherhood; but the great mass must probably always remain as they are at present—*dentists*—worthy citizens—we do them no disrespect—artists of ability, many of them—but yet in no sense practitioners of medicine—in no sense entitled to recognition as such." . . . .

Now, there is little doubt that these remarks which we have just quoted are true as regards both America and this country; but it is not the whole truth. In enumerating the duties of the dental surgeon, it is not right, as to facts, to limit his operations to the plugging and extracting of teeth and the application of artificial dentures. The dental surgeons practising in the principal cities (of this country, at any rate) have been in the habit of extending their treatment to diseased conditions of the gums and mucous membrane of the buccal cavity, neuralgia of the fifth pair of nerves, cysts, and epuloid tumours of the jaws, and in London, even so far as the operation of staphyloraphy. The *Philadelphia Medical Times* argues that, although the medical training of a dentist may be very *desirable* as bestowing increased culture, it is not *essential*, since his requirements are purely of a mechanical nature. We must beg leave to dissent from our American contemporary (1), on the grounds that the dentist's requirements and operations have not been properly recognised; and (2), that where they have been recognised they have not been estimated at their proper value.

As the author of the article under discussion has failed to ascertain the *ordinary practice* of high-class dentists and the requirements of every other dentist we will take a case from the limited field of work that he has assigned to the dental practitioner; and here we find it is no difficult matter to show that medicine and surgery are not only desirable, but necessary acquirements for the operator to possess. To select only one of the many instances that might be cited, surely with an inflamed pulp and periosteum, a knowledge of the changes produced by inflammation is essential, and successful treatment itself, must involve a fair acquaintance with therapeutic agents. In this case, then, we have a condition that is frequently being brought under the notice of the dentist, and we have, moreover, a case in which mechanical skill, however great, is of no avail. To argue that the space occupied by the pulp and periosteum is small, and therefore unimportant, is to say nothing to the point. The treatment of inflammation is based upon the same knowledge, wherever it may occur; and the sound practitioner of dental surgery brings the same sort, though not perhaps the same amount of information, to bear upon a diseased pulp, as his brother-practitioner brings to bear upon a diseased knee-joint. The acquirements that are essential to the one are equally so to the other; it is not a question of the necessity of possessing them, but of the extent to which they can be applied.

Holding these views in this country, our dental students pass through a curriculum in nearly every respect the same as that required for medical practitioners; and basing their practice of dental surgery upon the scientific knowledge thus obtained, they claim (and the claim is being generously recognised by their medical brethren) a right to consider themselves a section of that profession which is devoted to the healing of the sick and the alleviation of pain.

DENTAL SURGERY IN ABERDEEN.

In the new edition of Professor Pirrie's "Surgery," recently published, we are glad to find a chapter on Dental Surgery, contributed (at Professor Pirrie's request) by Mr. Williamson, the Lecturer on Dental Surgery in the University of Aberbeen. The *Aberdeen University Gazette*, reviewing the volume, says: "'Dental Surgery' is one of the best chapters in the book, and is certainly the best we have ever seen in a work on general surgery. In next edition we hope to see it contain some mention of alveolar abscess (gum-boil), especially from the lower jaw, and of alveolar hæmorrhage, both of them subjects often perplexing to surgeons, also a division on dental anæsthetics, concerning which surgeons are at present left to pick up their knowledge as they best can."

We think the profession may fairly be congratulated on this fresh evidence that dental surgery is slowly but surely taking its proper position as a speciality of general surgery.

ON PREMATURE LOSS OF THE TEETH.

A CLINICAL LECTURE DELIVERED AT THE DENTAL HOSPITAL.

By Charles S. Tomes, M.A.

The gradual loosening and ultimate loss, of perfectly sound teeth is so general an occurrence in aged persons, that it has come to be regarded as one of the ordinary phenomena of senile change, although in an absolutely normal state no doubt the teeth ought to last as long as the rest of the organism. Amongst domesticated animals the loss of the teeth some time before the death of the animal is of common occurrence; but I do not know that it takes place among wild animals, if we except the teeth of some of the seals, which are shed at a comparatively early period, and special teeth in some animals, such as certain of the bears and the kangaroos, which are shed while the rest of the teeth remain in full functional activity.

It is not, however, of this loss of the teeth at a time when the whole body is showing signs of diminished vigour, that I propose to speak to-day, but rather of those cases in which, in persons apparently in full bodily health and vigour, tooth after tooth becomes loose and falls out, or is extracted. Little is said about this malady in your text-books, for the reason that, though it is of the utmost importance to the sufferer, its pathology is very imperfectly understood, and its treatment regarded as hopeless, so that the patient is usually told that he must wait until the act of mastication comes to be imperfectly performed, and then fill up the gaps with artificial substitutes; and my intention is to lay before you, so far as I am able, the few reliable datas which we have, and the inferences to be drawn from them, as well as to introduce to your notice a plan of treatment, which, although I believe it to have been originally based on a wrong idea of the pathology of the disease, is nevertheless attended in practice with a fair amount of success.

In a typical case of the malady, the following are the usual symptoms: Some of the teeth, very generally at the back of the jaw, and often with exact symmetry on the two sides of the mouth, become slightly loose; the loosening rapidly increases, the gum separates from the necks of the teeth, and pus is, in small quantity, shed out around them. Then the teeth first affected either fall out, or become so troublesome that the patient desires to have them extracted, and this process spreads from tooth to tooth, generally attacking in regular succession those teeth which were next to the one first lost, till most or all of the teeth have been shed.

The age of the patient is seldom less than thirty-five, and I have I think more often observed it in males than in females; whether it be a matter of accident I know not, but certainly in the cases which have come under my own observation, the freedom of the teeth from caries has been noteworthy, and I recollect seeing this same remark made by some writer, whose name I do not now remember. When the progress of the disease is rapid there is very generally some little pain of a neuralgic character, rather than localised toothache, though when the teeth have become very loose their movement causes pain, and even may set up active inflammation in the soft parts around them.

The discharge which hangs about the necks of the teeth is exceedingly offensive, and has a peculiar characteristic odour, so that the nature of the case may usually be instantly recognised by the peculiar fœtor of the breath, even before any examination of the mouth has been made. The various stages may be studied in one and the same case, for it is rare for many teeth to be simultaneously attacked, and destruction of the sockets of all the teeth at the same time, is a thing which never happens in the form of the disease occurring in persons of middle age.

The first indication of anything wrong is the thickening and rounding of the edge of the gum; this should be, as you are aware, quite thin, almost sharp, closely applied to and embracing the necks of the teeth; but it soon ceases to be so firmly applied, and between this thick rounded edge and the neck of the tooth, there is formed a groove, which speedily deepens, so that there comes to be a sort of pouch between the gum and the tooth, into which the end of a small instrument may be passed, and which is filled with shed off epithelium, and a little pus; at this time the free edge of the alveolus becomes bare and rough. The detachment of the tooth from the gum becomes deeper and wider, till the edge of the bony socket is reached; this rapidly wastes, though not equally all round the tooth, so that it often happens that a piece of stiff twine will pass up on one side as far as half or two thirds of the total depth of the socket, while on the other it will not enter at all.

If a steel instrument be used instead of the twine, a grittiness is felt, which, if the tooth be extracted, is found to be due partly to the roughness of the tooth fang, partly to that of the socket. On the tooth fang, this roughening is mainly due to irregular absorptions and redepositions of cementum, which often renders the apex of the fang quite sharp and rugged to the touch; small incrustations of tartar are also found upon it. A thin ring of tartar also frequently embraces the neck of the tooth immediately below the edge of the gum, occupying that abnormal channel or groove which surrounds teeth when in this condition. At this period the gum around the affected teeth is spongy, of dusky-red colour, and pressure upon it causes pus to exude around the necks of the teeth.

Now, the plan of treatment to which I alluded, which was introduced and warmly advocated by Dr. Riggs, of Hartford, Connecticut, is based upon the assumption, wrongly as I think, that the deposition of tartar is the real cause of the disease, and as some of his arguments are drawn from the treatment and its results, I will pass on to describe these before discussing the question of its true pathology.

His treatment consists in the absolute removal of the tartar, paying even more regard to that which is below the edge of the gum and within the socket, than to that which is visible. For this purpose he has devised a special set of instruments, by the use of a series of which, he affirms that every part of a tooth fang which has become detached from its investing tissue can be reached and scraped. Not only is the tooth scraped, *but the free edge of the alveoli*, which, as I have before noted, is felt to be rough and bare, is also scraped until the different sensations conveyed to the finger indicate that healthy bone has been reached. Necessarily the operation is a protracted and rather painful one, though, at all events, in the earlier stages of the malady it is not so painful as might have been anticipated; and, in order to do it efficiently, scalers more or less like Dr. Riggs' must be adopted, for the ordinary forms are perfectly useless for this purpose; and a considerable number of forms are essential, in order to thoroughly reach all the surfaces of bared tooth fang and alveolus.

This treatment thoroughly carried out does certainly bring about exceedingly good results; in cases so severe that the pillow was every night stained with the purulent and bloody discharge oozing from about the necks of the teeth. This discharge was entirely stopped, and the gum more closely embraced the necks of the teeth, which also became again firm, though, of course, not quite so firm as before. Several cases which had been operated upon at various times were shown to me whilst I was in the United States, and I had the opportunity of watching the progress of one myself; moreover, there is the concurrent testimony of many of the ablest dentists in the States, that not only is very great benefit at once obtained, but that after, at all events, two or three years, the malady has not returned.

Now, the unquestionable success of this treatment has been held to be strong, if not absolute confirmation of the idea that this loosening and loss of the teeth is due in the first instance to the deposition of tartar; but the facts admit of a perfectly different explanation, and do not, in my judgment, admit of explanation upon this hypothesis.

Of the occurrence of the tartar upon the neck of the teeth below the edge of the gum, and even down within the socket, where the tooth is detached from the soft tissues investing it, there is no question, for it is certainly there in many cases; the point is, is it *invariably* there, and is it the true cause of all the symptoms, or is it only an accident, so to speak, and a consequence of the detachment rather than its cause. In the first place, is tartar invariably present? Since witnessing Dr. Rigg's treatment I have very carefully examined the necks and roots of teeth extracted when in this condition, and although its presence is the general rule, yet in one or two of the best marked examples of the disease, none has been perceptible with a hand magnifier. Moreover, in one of the cases I carefully felt around the necks of several teeth which presented the earliest indication of mischief—namely, a thick rounded edge to the gum—and was unable to detect any tartar, even at a time when the thin edge of the alveolus was bared, and readily touched by the instrument.

But quite apart from the presence of tartar not being demonstrable in all cases, there are many other reasons which clearly point to some more general cause being at work; amongst others I may enumerate—

(1) That it seldom, or almost never attacks persons under thirty-five or forty.

(2) That it is often distinctly hereditary.

(3) That although it ultimately involves many teeth, it does not attack them simultaneously, but usually seems to spread from tooth to tooth.

(4) That, *cæteris paribus*, it especially affects dead teeth.

(5) That, whereas the deposition of a line of tartar around the neck of a tooth is exceedingly common, this rapid destruction of the alveoli is not very common.

Abandoning, then, the theory that tartar is the primary cause, we must fall back upon the symptoms to afford some explanation of its real nature. The first thing noticeable is a thickening and rounding of the free edge of the gum; now, this is continuous with the alveolar periosteum, and the intimacy of their connection is well exemplified by that thin bright red line on the gum around a tooth, with which you are so familiar as a trustworthy indication of inflammation of the alveolar periosteum. Moreover, at an early period the edge of the alveolus can be felt bare and rough around the neck of the tooth, so that the first point at which we are able to point to an abnormal condition, is the place of fusion between the gum and alveolar periosteum, *i. e.*, the edge of the alveolus. Ultimately, the whole lining of the socket participates, but it does not do so at the outset, else the teeth would probably be raised in the sockets, and tender, which they are not, until an advanced stage.

And, indeed, the success of Dr. Rigg's treatment is just as easily explained, and, in fact, more so, on the hypothesis that the primary seat of the disease is the edge of the alveolus. The surgeon, when he gouges and scrapes a carious bone, usually effects a temporary cure, and in very many cases the disease does not recur; again, the dentist who removes a tooth scrapes from it the diseased periosteum, and replaces it, also may succeed in remedying, temporarily, at all events, the morbid and painful condition. Now, the essential feature of Dr. Rigg's operation lies in the scraping of the alveolar edge; it is in this that it differs from ordinary scaling, and it is to this most probably that its success is due: he removes the diseased portion, gives the part a fresh start, so to speak, and often effects a cure.

For a few years past I have been in the habit of treating these cases by placing small fragments of fused chloride of zinc in the pouch between the gums and the teeth, and this treatment has been followed by marked improvement, which is intelligible enough if the edge of the alveolus be the site of the disease, but perfectly inexplicable if the presence of tartar was the real source of trouble.

On the whole, then, the conclusion most in accordance with the facts is that the disease is one affecting the alveolar periosteum at the margin of the alveolus, and progressing thence downwards into the socket until ultimately the whole bony alveolus is removed. If it is taken at an early stage, both reason and some experience point to its being possible to arrest it by a removal of the part affected. At all events, Dr. Rigg's operation deserves a thorough and wide trial, and I would counsel you to practise it upon any suitable case, remembering, however, that its efficacy depends upon its being thoroughly carried out, and that this is only possible with the exercise of some endurance on the part of the patient and a great deal of patience on the part of the operator.

ON THE MICROSCOPICAL STRUCTURE OF FOSSIL TEETH FROM THE NORTHUMBERLAND COAL MEASURES.

By W. J. Barkas. L.R.C.P. Lond., M.R.C.S. Eng.

There has been no such general persevering activity in past times as is now displayed in all branches of microscopical research; this is the result of a variety of causes, but chiefly from the increasing excellence of the instruments, from their great cheapness, and to the rapid spread of knowledge in all directions by means of books, &c. That this activity is producing astonishing results is rendered evident by the vast progress that has taken place in pathology, in our knowledge of the development of different tissues, as in those of the teeth, and the discovery of parasites in the blood of human beings One of the chief fields that is being industriously investigated is the fossil remains in the different strata entering into the formation of the earth's crust. It is only to one stratum, the carboniferous, and to one portion of the fossil remains found in it—viz., the teeth of fishes, labyrinthodonts, and reptiles—that I at present wish to draw the attention of the readers of the *Review*, some of whom may, perhaps, have studied the structure of the teeth of fishes and reptiles of the present day, or at least, if they have not made it a special study, have seen specimens in the cabinets of others, but very few will be acquainted with the great variety and beauty to be observed in fossil teeth.

On comparing the teeth of modern fishes and reptiles with those that lived in remote ages a very marked similarity will be found both in their general external characteristics and in their general minute structure when examined under the microscope, but in fossil teeth there are many characteristics that are not to be observed in living species. That it is of great importance to be able to make the above comparison is evident, for without this help there would be a great chasm in our knowledge of intermediate forms. Prof. Owen, in the preface of his work on "Odontography," makes the following remark:—"For so vast is now the extent and so rapid the progress of palæontology, and so important are the links in the chain of Being thus recovered, that no treatise on the comparative anatomy of the enduring parts of animals can fulfil its expected purpose, if it be restricted to the description of such parts in existing species alone."

All the teeth to be described in these pages have been obtained from the coal measures of Northumberland, and are now in the cabinet of my father, and their external characteristics are described in his "Illustrated Guide to the Fossil Remains of the Northumberland Coal Measures." It is generally considered that the teeth of fishes, labyrinthodonts, and reptiles only are to be found in these coal measures, but my father has now in his possession an inferior maxillary bone containing teeth closely resembling the lower jaw of a small mammal. There is still, however, some doubt among palæontologists as to its being a true mammal jaw; this doubt principally arises from the fact that it is very small, and that no mammal jaw has been obtained, either before or since the discovery of the above. It is very probable that a microscopic examination of the structure of the teeth would at once settle all dispute, for the histological characters of a mammal tooth are quite distinct from those of reptiles and fishes, but on account of the comparative completeness of its contour, and also from its great rarity, he is unwilling to allow the specimen to be injured by making a section from it. The minute structure of the osseous tissue of the jaw would also tend towards a satisfactory conclusion.

Fossil teeth, like all other teeth, have one or more medullary canals, and are composed principally of dentine; many have also an external coat of cementum, and within that, one of enamel; but one or both of the latter coverings may be absent, as in nearly all fish-teeth. Before drawing attention to any particular teeth found in the carboniferous strata, it may be desirable to describe, as briefly as possible, the general microscopical structure of the parts entering into their composition.

Dentine is composed of extremely minute tubes, cells, and earthy particles, these particles being blended with the animal matter of the interspaces and the walls of the tubules, or are situated in the interior of the tubules or cells in a minute and irregular granular form. The calcigerous tubes are embedded in the intertubular tissue containing cells, and run from the medullary canal to the outer surface of the dentine; the main tubes give off ramuli which anastomose with each other and join the intertubular cells and the cells at the periphery, and in their course they describe two, three, or more curves. Each tube, besides this tortuous course, is bent into minute and regular undulations. Retzius counted two hundred of these waves in one-tenth of an inch of a single tube. Dentine is of two varieties—viz., unvascular, or vaso-dentine; and vascular, or osteo-dentine. Unvascular dentine is that form in which there is a single medullary canal, with the tubules arising from it, as in the above description, and it enters into the formation of the extinct Megalichthys, Pygopterus, &c. In vascular dentine there are two or more medullary canals, which may or may not communicate with each other. The first is a constituent of the teeth of most mammals, reptiles, and of a few fishes; the latter of most fishes, few mammals, and fewer reptiles. The vascular and unvascular dentine may, however, be present in the same tooth, as in the extinct Diplodus.

Osteo-dentine has been classified by Prof. Owen into three varieties, according to the number and arrangement of the medullary canals. In the first variety these canals are two or more in number, are equidistant and parallel with each other, seldom anastomose, and have each their own system of calcigerous tubes; each system being separated from its neighbour by a thin wall of cement or bone, thus forming separate denticles. These denticles are quite separate in the parrot fishes; anastomoses of the contiguous canals occur occasionally in the eagle-rays and saw-fish, while in the chimæroid fishes they are more numerous.

In the second modification the teeth are generally large and compact, the canals are less regularly equidistant and parallel, dichotomise more frequently, and anastomose more freely; the denticles are not separated by cement or bone, but by minute calcigerous cells, with which the tubules communicate; the terminal branches of the tubules of one denticle pass beyond this boundary, and anastomose with those of the neighbouring system, thus rendering the boundary often obscure. This form is observed in the Port Jackson shark and in the Ceratodus, a fish living in Australian waters, and whose prototype is to be found in palæozoic times; also in the extinct genera Ptychodus, Psammodus, Helodus, Ctenoptychius, &c. The chimæroids may be considered the intermediate stage between these two varieties.

The third variety is permeated like net-work by the very free branching and anastomosing of the canals. The canals open directly into the Haversian canals of the jaw, to which the tooth is anchylosed, and as they approach the periphery of the tooth they become smaller and smaller in their calibre. In the interspaces are the calcigerous tubes and cells; the tubes divide and anastomose freely like the canals from which they spring, forming a moss-like plexus. This structure is present in the extinct Lamna, Dictyodus, and Saurocephalus. The extinct Acrodus is an intermediate form between this and the second variety. Unvascular dentine is found in the fossil sauroid fishes and pycnodonts, and also in a few fishes of the present day—as the bream, wrasse, some sharks and rays, &c.

Cement closely resembles bone in its structure, and when of sufficient thickness contains Haversian canals and corpuscles of Purkinje; these corpuscles are absent in the cementum of those fishes whose bones are deficient in them.

Enamel is composed of minute striated fibres whose inner extremities rest in slight depressions of the periphery of the coronal dentine, from whence they are directed at right angles. The fibres are beautifully waved, and ramify and subdivide like those of the dentine. Enamel, in many fishes, is distinguishable from dentine only by its pure white colour; in this case it is called fish enamel, or ganoine, and is very frequently absent altogether.

The teeth which I intend to describe I shall arrange according to the following order:—Fishes, subdivided into Elasmobranchs and Ganoids; Labyrinthodonts: Reptiles.

(*To be continued.*)

DEATH FROM CHLOROFORM.

[THE BRITISH MEDICAL JOURNAL.]

A DEATH from chloroform has occurred at Hamilton, in the practice of Dr. Dickinson, to a man to whom the anæsthetic had been administered, in order to facilitate the reduction of an old-standing dislocation of the shoulder-joint. The deceased had been a hard drinker. Dr. Dickinson used the venous injection of ammonia without any result. It is reported in the *Australian Medical Journal*, August, 1873.

CASE OF PURULENT INFECTION AFTER EXTRACTION OF A TOOTH.—The case was that of a man of strong constitution, who had recourse to a horse farrier for the extraction of one of the last left molars. The gums were violently contused, and a fragment of the alveo-dental periosteum torn away. A few days after, the following symptoms occurred:—Headache, insomnia, fever, horrible fœtor of breath, inflammation of the left cheek and gums, with formation of an abscess. Notwithstanding energetic treatment, the patient died two or three days later. The author draws attention to the importance of not wounding the gum in extraction of teeth.—Recorded by Dr. Bouyon in *Courier Médical*, and republished in the *Lancet* for November 29th.

A SIMPLE METHOD OF REGULATING TEETH.

By Oakley Coles, L.D.S.R.C.S.,

DENTAL SURGEON TO THE HOSPITAL FOR DISEASES OF THE THROAT.

It is quite possible that the plan that I have for some time practised, and which I now propose to describe is not original, but as I have never seen any published account of the same simple method of regulating teeth, it is desirable that it should be made known, either to be more extensively adopted, or if found wanting, thrown aside.

A typical case will show the plan I adopt more readily than any general description. The engraving Fig. 1, shows a very common form of dental irregularity. No extractions are necessary, there is simply displacement, due probably to the eruption of the canine teeth acting upon a somewhat contracted jaw, the affected teeth having probably a natural tendency inwards, owing to a somewhat prominent pre-maxillary region. Still, with the arch restored to its natural form there is ample room for all the teeth. Models are made of the mouth for the sake of recording the case, also to ascertain the precise relations of the various teeth to each other.

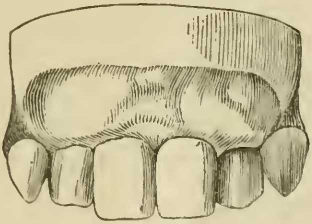

Fig. 1.

Examining the mouth and models, we see that the principal thing to be done is to bring the laterals out, and after that the bicuspids on each side of the upper jaw.

The following is the plan to be pursued: After measuring the distance across, from the most prominent part of the *labial* surface of the canine to the centre of the *labial* surface of the central incisor, cut off a stick of compressed hickory (in the round form) of the measurement obtained, split the stick in two, or cut it down till you have a half-round stem of wood, the one surface being quite flat; trim up the ends so that they do not present any sharp edges to the lip, this can be applied to the mouth or model, the two ends resting by the flat surface upon the canine and central teeth, care must be taken that free space exists between the surface of the wood and the lateral that is to be drawn forward, if the flattened surface is in contact, room may be given by filing a concavity in the wood immediately over the tooth; the wood being fitted in a satisfactory manner, a piece of gilling thread (American hemp, small size) is passed double between the central and lateral, and then passing behind the lateral tooth close to the neck, the double thread is brought out again between the lateral and canine; we have then on the labial side, the loop projecting next the central, and the two ends of the double thread projecting next the canine, while on the lingual surface we have the double thread closely embracing the neck of the lateral. If we now tie the two ends of the thread (next the canine) together so that they embrace the end of the hickory, the other end being embraced by the loop, we exert considerable pressure upon the lateral tooth; (1), by the mere tying; (2), by the contraction of the thread as it becomes moistened by the saliva; and (3), by the expansion of the compressed hickory, tightening the thread still further. This appliance needs renewal twice a week, but intelligent patients can do it for themselves or their friends can do it for them. The result obtained in three weeks by this method, in the mouth that I have figured as a typical case, was most satisfactory.

It is obvious that the same principle can be applied to the treatment of a great variety of irregularities, modified of course, according to the requirements of each case, At the same time I may remark that its advantages over treatment by plate are considerable; (1), it is not liable to displacement; (2), the teeth can be kept clean without removing the thread and wood; (3), the progress made, is easily seen and recognised both by patient and operator; (4), the pressure is continuous and not under the control of the patient; (5), it is not unsightly in appearance, and, lastly; (6), it is inexpensive, so that in hospital practice many more patients can be treated than by the old method.

ABSOLUTE ALCOHOL.

By Henry Sewill, M.R.C.S., L.D.S.,
DENTAL SURGEON TO THE WEST LONDON HOSPITAL, ETC.

The subject of the use of absolute alcohol for the purpose of drying cavities preparatory to the insertion of fillings was brought forward by me at the meeting of the Odontological Society in June last. My brief remarks on that occasion are reported as a necessarily short abstract in the Society's Transactions, and believing that the agent the use of which I advocated is of some value, I now give more fully an account of its properties and of the mode of its application.

Absolute alcohol is prepared by distilling ordinary rectified spirit to which carbonate of potash or lime has been added. By this process the water is abstracted by the salts or lime, and pure spirit distils over. Its sp. gr. at 60° F. is 0·7947. It has a strong affinity for water, which it abstracts even from the atmosphere, and it must therefore be kept in well stoppered bottles. When water is added to alcohol they combine with the evolution of heat, and when cold the resulting compound is found to possess a greater density than the mean of its constituents, and the resulting fluid must be regarded as a definite chemical compound of alcohol and water, not a mere mixture of the two fluids. It is this attraction for water which renders alcohol peculiarly applicable to dental purposes, and the property which it also possesses in high degree of preventing the putrefaction of animal matter makes it still more valuable. When animal substances are immersed in spirit this fluid abstracts water from the tissue, which in consequence shrivels up, and it prevents putrefaction by removing one of the conditions essential to the process, namely, the presence of water. Its attraction for water and its power of coagulating albuminous substances are properties which probably assist in rendering it an antiseptic.

Alcohol has long been used in the preparation for microscopic examination of specimens from which it is desired to abstract the water without injury to the tissues. Sections of recent bone or dentine, if immersed in the spirit and then exposed to the air, are almost instantly rendered perfectly free from moisture, and it was the manipulation of specimens in this way which suggested to me the use of alcohol in dental operations.

For drying a simple cavity all that is necessary is, after preventing the access of saliva, to insert for a moment a pellet of cotton-wool saturated with the spirit. When this is withdrawn all fluid that remains is a compound of spirit and water, which rapidly evaporates, leaving a surface more free from moisture than could be produced by any amount of mere wiping with amadou or other absorbent material.

It is my opinion, a justification of which would be out of place under my present heading, that it is extremely bad practice in a large number of cases to excavate the whole of the softened dentine from the depths of cavities when the removal of the tissue would expose the pulp. The softened dentine in such cases can be hardened rapidly by the application of alcohol. If the rubber dam be applied the cavity may be freely swabbed with the spirit, which will at once produce a surface for the reception of a plug better than would result from the insertion of temporary fillings combined with astringents.

In fang filling alcohol is especially valuable. When freely passed into the canals it not only renders them perfectly free from moisture, but it hardens, shrivels, and renders incapable of decay any shreds of pulp or other tissue which have not been removed in excavating. The decomposition of such particles is undoubtedly a cause of failure after fang filling, and although I know that it is unsafe as a rule to attribute practical results to any new agent until great experience has been obtained, I feel that I may record the fact, that during the time that I have used alcohol, now about eighteen months, no case in which I have filled root canals has returned showing unfavourable symptoms. The treatment with the spirit is sufficient in my mind to account for the success. The roots have been invariably plugged with oxychloride of zinc and a few filaments of cotton-wool.

Alcohol is also valuable for the drying of cavities into which oxychloride of zinc fillings are to be inserted. These fillings will not adhere to moist surfaces, but attach themselves with great tenacity to those which have been deprived of every trace of water by spirit.

From what has been said of the properties of absolute alcohol it will be evident that it is an agent likely to answer in dealing with sensitive dentine, and in practice I have found it useful. It acts doubtless upon the contents of the dentinal tubes, hardening them and destroying their sensibility.

As the result of all my experiments upon teeth in and out of the mouth, I conclude that no fluid sufficiently innocuous for use in practice can compare with absolute alcohol for the purpose of drying cavities, and that some things which have been strongly recommended for this purpose are altogether useless. Among these latter I enumerate chloroform. Chloroform has no affinity for water, with which, indeed, it does not even readily mix, and to wipe out a cavity with chloroform is less effectual than if dry wool alone be used. Absolute alcohol, on the other hand, not only removes superficial moisture, but it deprives the tissues of the water which they intrinsically contain. Like every other liquid which has a strong affinity for water, it will, of course, produce irritation if allowed to flow upon the skin or mucous membrane, although this will be but slight if the surface is wet or the quantity of spirit small. Accidents of this kind need not occur; they do not happen in my hands, nor will they, therefore, in those of other operators.

ON THE APPLICATION OF RUBBER DAM.

By J. W. Gascoigne Palmer, L.D.S.

Believing that a mode of applying rubber dam which is quick and easy, and results in the complete exclusion of moisture from the tooth being operated upon, will be of some use to those dental surgeons who take an honest pride in making the best possible gold plugs, I have much pleasure in contributing to the knowledge already existing on the subject the result of my own experience in the working of the dam, and also the mode in which I now use it; and I am very pleased to do this through the medium of the *Dental Review.* My failures when I first used the rubber dam were numerous; often I tried to get it in place for fifteen and twenty minutes and then had to give it up, but so certain did I feel that if it could only be got in place it was superior to all napkins, bibulous paper, amadou, &c., that I worked steadily at it, and I am pleased to say that there are now few cases in which I cannot apply it, and apply it quickly.

The greatest difficulty presents itself when we encounter molar teeth pressing firmly on one another, which seem to defy all attempts at getting the dam between them, and in this paper I shall treat only on the application of the dam in cases of crown cavities in molar teeth, selecting and explaining two cases and reserving for some future occasion its application for mesial and distal cavities, and also for that very important and best of all side plugs, the matrix.

The two cases I intend to take as illustrations of my mode of applying the dam to molar teeth are :—

Case 1.—Crown cavity in first lower molar; second bicuspid and second molar being in firm contact.

Case 2.—Crown cavity in second upper molar; first molar and wisdom being in firm contact.

Case 1.—Having by the aid of the mirror and probe come to the conclusion that it is safe to fill the tooth at one sitting, we take two slips of the thickest rubber dam, a quarter of an inch wide and six inches long, and soaping each side for half an inch in the centre, we take one slip and twist the two ends round the first finger of each hand, and extending the middle part to its greatest stretch, force it firmly down between the first and second molar until the gum is just reached; now untwist the fingers and tie the ends of the rubber in a loose knot.

The second slip is treated in the same way, and forced between the first molar and second bicuspid.

Now proceed to excavate your cavity and prepare your gold; and this, in all cases where it is worth while to use the rubber dam, or any other mode of keeping the tooth dry, takes me nearly half an hour. The next requirements are an Allan serrated clamp, Royce's forceps, and some fine whipcord. Having tied a piece of cord to your Allan clamp to prevent all chance of its slipping down the throat, and also for a use which I will shortly explain, you, with the aid of Royce's forceps, fit the clamp on the first molar, placing the first finger of the left hand on the top of the bend of the clamp; be careful to open the forceps only so far as shall enable the clamp with the pressure of the left hand first finger to glide down the tooth to its neck, and thus, as it goes, it presses down the gum. If the clamp is opened too wide it is apt to grip a piece of the gum, which causes pain and produces a restless patient.

When the clamp is in its place it should be so firm that it is impossible to *remove it* with the finger, and difficult to move it. We now take a piece of rubber dam of medium thickness —four inches wide by five or six inches long—and punch one hole in it; this hole should be one inch from the end and one inch from the side. Now dry the patient's mouth with bibulous paper and thread the bit of cord attached to the clamp through the hole in the rubber dam, and run the rubber dam over the cord and over the bend of the clamp. Now remove the two slips of thick rubber, and at once bring the rubber dam down between the three teeth and over the jaws of the clamp to the neck of the tooth about to be filled. A very little practice will make this very easy, provided that no time is lost between the removal of the rubber slips and the application of the rubber dam. The rubber should now be thus: one inch towards the cheek, one inch towards the throat, three inches over the tongue, and the remainder resting on the lower lip, the cord attached to the clamp being held by the patient, which keeps the rubber out of the operator's way.

One thing more and the operation is complete. A roll of bibulous paper, about the thickness of a finger, must be put between the rubber and the cheek, otherwise the discharge of saliva from Steno's duct will run on to the rubber dam and overflow the crown of the tooth.

CASE 2.—The manner of using the rubber in this case is the same as for the lower molar in all particulars except the size of the piece of rubber dam and the position of the hole. The most convenient-sized piece of rubber dam is six inches by three inches, and the best place for the hole is one inch from the side and two inches from the end. When in position, the two-inch bit, should be towards the front of the mouth, the one-inch next the cheek, and the four inches should fall down at the back of the clamp, and then be brought forward over the lower lip. By forcing the twist that is attached to the clamp between the canine and bicuspid the front flap of the rubber will be kept out of the operator's way.

Trusting that I have made the manner of applying the rubber dam as plain in these two cases as it is easy to me to apply it, I bring the paper to its conclusion.

HOSPITAL OUT-PATIENTS.

THE following, says the *British Medical Journal*, is an extract from a report which has recently been made by the Paddington District Committee of the Charity Organisation Society to the Central Council. It confirms, in a remarkable manner, the results of the investigation which has lately been carried on at the Queen's Hospital, Birmingham, and it bears out the opinion which has often been expressed in these columns with regard to the social condition of many of our hospital out-patients. The subject of gratuitous out-door medical relief having attracted some attention, twenty-six out-patients of the St. Mary's Hospital were selected for inquiry as being likely to prove able to pay for their own medical attendance. The result showed that of these, five were cases of persons not suitable for hospital treatment—*i.e.*, they were persons not at all in distress, and who could afford to pay a medical man; twelve were cases who could well afford to pay for the benefits of the provident dispensaries; two gave false addresses; and seven were considered proper objects. It became known among the out-patients that inquiry was being made, and although a look-out has been kept, only two such cases have applied since. One of these acknowledged he was not in distress, and was quite willing to subscribe a guinea to the funds of the hospital; the other belonged to a respectable family, but has had much sickness, and paid many doctors' bills.

THE SURGERY OF THE MOUTH.

By Francis Mason, F.R.C.S.,
SENIOR ASSISTANT-SURGEON AND LECTURER ON ANATOMY AT
ST. THOMAS'S HOSPITAL.

(*Continued from* Vol. ii., p. 160.)

GLANDULAR GROWTHS ON GUMS.

The very numerous examples of tumours about the gums that I have had the opportunity of observing, through the kindness of Sir William Fergusson, lead me to believe that many of the supposed cases of epulis, or fibrous tumour, are growths made up largely of glandular structure. I have for many years carefully examined microscopically several instances, and I have invariably noted the presence of an extraordinary amount of gland-like tissue, not only surrounding, but even entering into the composition of these growths. A brief reference only is made to this pathological condition in Paget's "Surgical Pathology," but the subject is one which deserves more careful investigation.

CYSTS OF JAWS.

Cysts in connection with the jaws may, for convenience, be thus classified :—

1st.—Cysts in or near the gums, which, to mark their character, I would term "*Alveolar Cysts.*"

2nd.—Cysts connected with the roots of perfectly developed teeth, which, for distinction, I would term "*Odontoid Cysts.*"

3rd.—Cysts connected with imperfectly developed or misplaced teeth, the so-called dentigerous cysts, but to which I would apply the term "*Endo-odontoid Cysts.*"

4th.—Cysts within the antrum.

1st.—Cysts in or near the gums (*Alveolar Cysts*).

Reference has already been made to cystic tumours in connection with the mucous membrance of the mouth (see *Monthly Review of Dental Surgery,* Vol. i., No. 6, p. 266), and much that was then said might now be repeated in considering the affection to be here noticed. I am especially anxious to draw the line between those cysts that are connected with the teeth and those that are independent of them. In most of the writings on dental surgery, cystic growths about the jaws are almost invariably associated with diseased, or at least with irregular teeth; but it seems, from experience, that such connection is far from necessarily constant. Hence I have ventured, as the reader will observe, to suggest a new nomenclature for these cysts of the jaws, believing that as at present named, their characteristic features are not sufficiently defined.

There can be no doubt that cysts of various kinds are found in or near the gums, quite irrespective of any affection of the teeth. For example, we observe mucous cysts, serous cysts, sanguineous cysts, sebaceous cysts, hydatid and other cysts — each variety having its characteristic contents. Although painless in their growth, they may become acutely inflamed and suppurate; under these circumstances the contents, especially in the sebaceous variety, are extremely offensive. I have had several "alveolar cysts" under observation, the commonest varieties being the mucous and serous cysts. It has not fallen to my lot to see more than three cases of sanguineous cysts, and two cases of sebaceous cysts, containing chlolesterine; in one of the latter I believe I detected a few hairs. The position has in all these cases been about the bicuspid region, and they seem to grow from, or in some way, to implicate the periosteum. All these cases have occurred in the upper jaw, but I regard this circumstance as a coincidence only. The swelling is generally painless, soft, and elastic. The patient fancies he has a gumboil, but the cyst, owing to its tension, does not impart to the finger a sense of decided fluctuation. The basilar portion of the jaw is often more or less encroached upon, so that as much as half a marble or more might be buried in the bone.

The *treatment* consists in freely opening the cyst from the mouth, and then applying the nitrate of silver or other caustic to the interior, or of introducing a piece of lint, so as to promote granulation from the bottom, suitable lotions being, if necessary, employed. The patient will generally require but little constitutional treatment—indeed, the majority of those I have seen have enjoyed excellent health.

There is one point to which attention may be directed, and it is that after opening sanguineous cysts, the hæmorrhage is in some cases rather free. I remember puncturing such a cyst on one occasion, and for three days there was a constant oozing of blood, which much exhausted the patient, but he ultimately did well. The depression in the jaw is a cause of anxiety with some persons, but in time the sharp edges become rounded off, and the part fills in with solid material.

2nd.—Cysts connected with the roots of perfectly developed teeth, or "*Odontoid Cysts.*"

Most surgeons, and all surgeon-dentists, must have observed a cyst or cysts attached to the fangs of extracted teeth. These fang-like bodies have, I cannot but believe, been too often supposed to be part of the sac of an abscess, and thus their real nature has been overlooked. This statement is perhaps difficult to prove, but it is, at least, fair to assume that when very small these "*Odontoid Cysts*" may give rise to no symptoms whatever. After a time, from some cause, perhaps from the irritation set up by a stump, the cyst may suppurate, and thus the condition is spoken of as an abscess, instead of as a "suppurating cyst," which is its proper title.

These cysts may attain a large size, and as they grow they cause absorption of the neighbouring bone. In the upper jaw, in connection with the molar teeth, they acquire a considerable magnitude, in some cases invading the antrum, so that they have been mistaken for those cysts which belong properly to the lining wall of that cavity. Delpech's case[*] reads as if it were a cyst connected with the teeth, although he concluded it was an instance of a membranous cyst developed in the bone. He says: "Elle ne presentait dans le bas rien de comparable à la rainure large que l'on appelle la paroi inférieure du sinus maxillaire, rien en haut qui répondit au plancher de l'orbite, rien en dedans qui peut être pris pour la paroi interne du sinus." Nevertheless the case may have been one of cyst in the antrum.

The contents of these cysts vary. They may be fluid, having a thin, serous, colourless or blood-like character, or they may be of a glairy, tenacious, ropy consistence, like some alveolar cysts. They not unfrequently contain chlolesterine,[†] and instead of being single, may be multilocular.[‡] Further reference will be made to this subject in speaking of diseases of the antrum.

These cysts, when they attain a certain size, cause a projection, especially on the outer side of the jaw. The bony wall becomes thinned, and fluctuation is not well marked. The tumour feels, so to speak, something like, on a small scale, the cranial bones of a newly-born infant. It crackles under the finger. Here and there, when the bone has been completely absorbed, a soft projecting spot may be detected, and it is in this situation that an exploratory puncture may be made, to ascertain the character of the contents.

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[*] Quoted by Stanley, "On Diseases of Bone," p. 299.

[†] Trans. Odont. Soc., 1862. Mr. Coleman's case.

[‡] The Museum of St. Thomas's Hospital contains excellent specimens of these and other cysts connected with the teeth and jaws.

In the *treatment*, it is of importance to ascertain the exact tooth implicated, and if it seem useless, or cause much inconvenience (which is a rare occurrence), the best plan is to extract it. This will in some cases effect a cure; but seeing the difficulty there is in forming a correct diagnosis as to the cause of the cystic development, that is, whether the cyst be "*alveolar*" or "*odontoid*," it seems to be better surgery to ignore the cause, and deal directly with the cyst itself. In this way, in all probability, a sound—or, at least, a useful—tooth may be retained, instead of being—perhaps needlessly—sacrificed. A free incision should be made into the cyst, and if necessary, a portion of the bony wall removed with the cutting pliers. It is especially essential in these cases that there should be a *free* opening, for the lining membrane on the admission of air secretes a most offensive discharge. Hence, antiseptic injections of the permanganate of potash or of carbolic acid are valuable agents. The part should be washed out thoroughly three or four times a day with lukewarm water, and afterwards black-wash, or lotions of sulphate of zinc (gr. ij. ad ℥j.), or of sulphate of copper (gr. iij. ad ℥j.), or other suitable applications may be employed.

A NEW OPERATION FOR CLEFT PALATE.

We learn from the *Lancet* that on Saturday, the 22nd ult., Sir William Fergusson, in operating on two patients for the closure of the opening in the hard palate after the cleft in the soft palate had been closed, adopted a modification of a procedure which is intended to increase the chances of success of the operation. Sir William remarked that in the so-called Langenbeck operation—that is, where muco-periosteal flaps are taken from the roof of the mouth and drawn towards the middle line—the proceeding is often unsuccessful from the fact that, after some time, the granulations which are thrown out on the upper surfaces of the displaced flaps contract and separate the union that may have taken place between the pared edges of the flaps. It is true, he observed, that some assert that bony matter is deposited on the upper surface, and that this diminishes the size of the aperture in the osseous palate. But, in demurring to this, Sir William said he thought it was hardly possible to strip off healthy periosteum from the subjacent bone. He proposed, therefore, as a remedy, that in addition to making the ordinary incisions for the flaps, the hard palate should be split on each side of the opening with some sharp cutting instrument, and that the two pieces of bone should be pressed towards the middle line, and the pared edges of the soft tissues then be brought together. By this means the central opening would be closed, but two lateral apertures would be formed. But inasmuch as the lateral openings would be but half the size of the original central one, and as there would be more likelihood of the fractured edges of bone throwing out osseous material for its repair, it was hoped that the prospect of a successful issue would be greatly enhanced.

ODONTOMES.

(Traite des Tumeurs. Par Paul Broca).

Odontomes Generally.

IV.—*General Study of Odontomes.*

(*Continued from page* 250).

Odontomes take such diverse forms that it is not possible to make them known by a general description: it will be necessary to devote a special paragraph to each of the groups that we have just established. Nevertheless, these tumours, notwithstanding their external dissimilarities, are sufficiently analogous with regard to their origin, their development, their clinical progress, and their operative indications for it to be interesting and useful to study together the characteristics which are common to the greater part of them. Only circumscribed coronal odontomes or warty tumours of the teeth are beside, this general study, which may be easily understood by referring to what we have already said.

Etiology.—Odontomes are the consequence of a hypergenesis, which is nothing more than hypertrophy affecting the tissues in the course of development. The causes which produce this accident to nutrition or rather to formation are up to the present time little known. In a remarkable case published in 1728 by Fouchard, an odontome of the inferior maxillary showed itself towards the age of seven years in a child, who three years before, by a fall from a horse, had received at this place a violent contusion, followed by the formation of an abscess.*

One can imagine that, up to a certain point, the inflammation of the bone could be propagated to one of the dental bulbs, and become the cause of the hypertrophy of this bulb. But an observation up to the present time unique, and the details of which are wanting in precision, would not be sufficient to establish the existence of odontomes of traumatic origin.

The only etiological condition which can be positively determined is that of age. I have already mentioned them, and shall therefore limit myself to repeating shortly that odontomes are an affection belonging to youth. They can no longer be formed after the development of the teeth is terminated. In the human subject whose teeth perfect their fangs before eruption, the extreme limit for the *debût* of an odontome is, for each tooth separately, the epoch when they penetrate the gum. Moreover to specify them it would be necessary to reproduce here a chronological table of the eruption of the teeth, which really is not necessary. I do not need to say how important the study of the age is in the diagnosis of odontomes.

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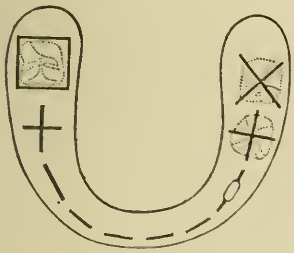
* Fouchard, le *Chirurgien-dentiste*, édition de Paris, 1786, 12mo, t. i., pp. 397.

(*To be continued.*)

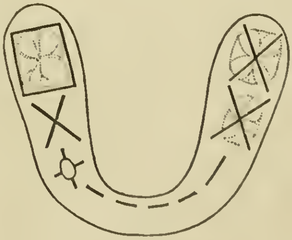
FOSTER FLAGG ON LANCING GUMS.

[THE LONDON MEDICAL RECORD.]

Dr. J. Foster Flagg (*The Dental Cosmos*, February and March, 1873; *Philadelphia Medical Journal*, October 25) gives the following practical directions for an operation which is too often imperfectly and unskilfully performed. Until recently, it has been thought sufficient to make a single straight incision over the coming tooth, and in many instances the mucous membrane has merely been scratched with the point of the lancet; there has been no relief of tension and inflammation, and in not a few cases the result has been fatal.



UPPER JAW.



LOWER JAW.

[We are indebted to the courtesy of the Editor of the *London Medical Record* for the use of the above engravings.]

In making an examination of the gums of an infant over ten months old, the finger should be introduced at the front of the mouth, as thus the centrals, and usually the laterals also, being fully erupted, all contact with tenderness is avoided. Under the age of ten months the corner of the mouth should be selected. The lancet should be wrapped with a piece of tape, beginning about a quarter of an inch from the point, and covering the remainder of the blade and a portion of the handle, securing it by slipping the end of the tape under the last turn and drawing it tight. This having been done, that portion of the gum which covers the irritating tooth should be taken gently between the first two fingers of the left hand, the thumb steadying the jaw by resting under the chin or upon the cheek, as thus, in any part of the mouth, the tongue, lips, and cheeks are protected. The incision should be made slowly, steadily, carefully, and gently, passing through the gum until the enamel of the coming tooth is felt, but only felt, as this tissue is not yet so hard but that it might possibly be injured by undue force in cutting. In lancing for the centrals and laterals of both upper and lower jaws, the incisions should be made nearly over the cutting edges of those teeth; but while the cuts in the upper jaw should be made rather exteriorly to the centre of the alveolar ridge, those of the lower jaw should be made inside of the centre. The single cut over the cutting edge removes, practically, all impediment to complete eruption, for as the teeth become thicker in one direction they become narrower in the other. The object in lancing a little externally above and a little internally below is to offer pathways to the teeth which shall tend to favour the production of the normal occlusion by guiding the upper teeth outwardly and the lower ones inwardly.

The first molars (twelve-months' teeth) should always be lanced with cervical incisions at least; but a more decided difference exists between those of the upper jaw and those of the lower than between any of the other teeth thus compared. In the upper jaw the cervical incision, as delineated in the diagram, relieves tension over the most prominent points of these teeth—the buccal and palatal cusps; while in the corresponding teeth of the lower jaw we should employ the crucial incision, thus, X, because in this way we reach their most prominent points—the two mesial and two distal cusps.

CONTENTS OF THE OCTOBER NUMBER OF THE "DEUTSCHE VIERTELJAHRSSCHRIFT."

On the Nature of Anomalous Formations in the Cavities of Upper Incisors. E. Muhlreiter.

General Appearances in Dentine. Rob. Baume.

On Stopping. Dr. G. V. Langsdorff.

Practical Observations. F. Kleinmann.

Notes from Practice. Rob. Baume.

Dental Guarantees. F. Kleinmann.

EXCISION OF THE TONGUE, LEAVING THE FLOOR OF THE MOUTH ENTIRE.

(UNDER THE CARE OF MR. GANT.)

(LANCET.)

A DISTINCT modification of any previous operation for removal of the whole tongue was performed on the 25th ult. The disease, a cancerous ulcer of the left half of the tongue, had been removed by Mr. Gant on two previous occasions with the knife, but without any permanently good effect, the ulcer having reappeared each time in the course of a few months. Yet the submaxillary glands still remained unaffected. Accordingly it became necessary, and under the circumstances it seemed justifiable, to excise the entire organ.

The leading features of the operation were these :—1. An incision was made on the left side, from the angle of the mouth through the cheek inclining downwards to the jaw, at the junction of the ramus to the body of the bone, thus freely gaining access to the root of the tongue ; 2. Then seizing the tongue with a forked vulcellum having a catch-spring to hold fast, the tongue was drawn well forwards and upwards out of the mouth ; two curved aneurism-needles were passed through the base of the organ from before backwards, the points emerging just in front of the epiglottis ; a strong écraseur, having one end of the chain unlocked, was then looped around the base, beyond the needles behind and in front, which thus effectually kept the loop well down around the whole tongue. The écraseur was worked slowly, at intervals of two minutes, and afterwards one minute, and half a minute, between each action of the handle, while the curved needles guided the chain deeply down through and along the floor of the mouth. The tongue was thus completely excised in a period of thirty-eight minutes. By means of hare-lip sutures the incision through the cheek was accurately closed. During this operation the influence of chloroform was readily maintained by inhalation through the nose. The patient swallowed a few spoonfuls of fluid the same evening, and slept for several hours in the night. He has since progressed rapidly towards recovery without an unfavourable symptom.

On the fifth day all the pins were removed from the cheek, and the line of primary union is scarcely visible. He can speak with sufficient distinctness of articulation to quite make himself understood, saying, "I feel easy," and "I should like some more beef-tea." The act of swallowing is perfect. These observations relate to a week after the operation.

SOME OBSERVATIONS
ON THE USE OF PHOSPHORUS IN NEURALGIA.

(*Illustrated with Eighteen Cases.*)

By J. Ashburton Thompson, Fellow of the Royal Obstetrical Society,
Surgeon-Accoucheur to the Royal Maternity Charity, &c.

(The Practitioner.)

[*Continued from p.* 271.]

I have used the oil (with the action of which also Dr. Anstie was not pleased) in five cases—exclusively, in three. The formula employed was—

Formula No. 1.

*Phosphorised oil	3 drachms.
Powdered gum arabic	6 ,,
Spirits of peppermint	½ drachm.

Water to six ounces.

I have avoided the use of syrup (as recommended by Soubeiran), or of chloric ether, both of which increase the nauseousness of the mixture. As tincture of orange is the best vehicle for chloral, so spirit of peppermint is incomparably the best vehicle for phosphorus. This mixture keeps reasonably well, and is, I am inclined to think, a very active preparation—perhaps more active than any other. It is, however, so extremely nasty, and moreover seems of itself to disagree so with the stomach, that I have not more than one patient who professed to have retained more than fourteen doses.

Tincture of phosphorus should be made by dissolving the material in absolute alcohol with the assistance of heat. The most convenient proportion for dispensing is—phosphorus, one grain; absolute alcohol, three drachms. This mixture will, I know, retain its powers for six weeks, although not kept in a full bottle; I do not know that it loses its efficacy after this period. Before adding this tincture to water, it is necessary to dilute it still further with rectified spirit; otherwise hydrated phosphorus will be precipitated. The formula I have employed is the following:—

Formula No. 2.

Tincture of phosphorus	3 drachms.
Rectified spirit	2 ,,
Spirits of peppermint	½ drachm.

Water to six ounces.

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* This preparation contains one grain of phosphorus to three drachms of oil, which seems to be the smallest proportion which can conveniently be used for dispensing.

This forms an active, efficient, and convenient preparation. It is not quite disgusting, and will be readily taken and well tolerated by those who have begun to experience benefit from the first few doses. It is unstable, and should therefore be supplied to the patient in quantities not calculated to last more than twenty-four hours. I have used this mixture in the majority of cases.

Observations.—The first general observation which presents itself is, that chronic cases are cured the most rapidly when they are cured at all; while among them is found the only absolute failure of the remedy employed. This obstinacy may be referred to one of the following causes:—First, the habit of pain into which the nerves have got, and the reaction upon their functional activity which the debilitating effect of constant pain must have; or, secondly, the extreme or particular kind of debility to which the complicating disease has reduced the subject; or progress of a specific nerve disease beyond the possibility of rapid recovery; or, lastly, the necessity for time to recover from the condition of anaemia which in a particular case may be the prime cause of the symptoms. For example, Case No. 13 was complicated with phthisis, which was advancing slowly but distinctly, and in addition was the true subject of a great deal of depressing mental irritation. Almost constantly for the last eighteen months she had been subject to nerve-pain affecting the cervico-occipital and brachial nerves, and on bad days both trigeminal nerves. She was under observation altogether for about three months, being treated in the first place with every kind of remedy, including muriate of ammonia. In my experience this remedy, administered in doses of from one to two drachms every two or three hours, ranks next to phosphorus in efficacy; but it must be given in doses as large and frequent as these; and in those cases which require the remedy—in neuralgia—I do not remember ever to have found it productive of sickness. Finally, since the attacks recurred with added severity every third day, she took large doses of quinine without effect. She was now put upon one-sixteenth of a grain of phosphorus dissolved in oil, and she derived some relief from the nine doses which she was able to retain; after that the stomach rejected the mixture. She then took one-twelfth of a grain every four hours in F. No. 2 for about five weeks, when she removed to the country. She was considerably relieved, but not by any means cured.

(*To be continued.*)

PROGRESS IN SCIENCE.

[QUARTERLY JOURNAL OF SCIENCE.]

Gold mining in the colony of Victoria continues in a healthy state of activity, judging, at least, from the volume of "Mineral Statistics for 1872," which has been prepared as usual by Mr. Brough Smyth, and recently issued under the authority of the Minister of Mines at Melbourne. These statistics do not pretend to offer anything more than approximate figures, for the returns are given voluntarily, and there is therefore no means of obtaining them from those miners who are not sufficienty acute to see that the collection of such statistics must even be of the greatest benefit to the mining community at large, and as individual statements are merged in totals that can never be prejudicial to the interests of individual members. But though the Victoria returns may not state precisely the quantity of gold raised during the year, they evidently merit a considerable measure of confidence. According to the estimates made by the several mining registrars, there were obtained in 1872 about 1,331,377 ozs. of gold. The returns furnished by the Commissioner of Trade and Customs give 1,160,554 ozs. 19 dwts. as the quantity of gold exported during the year; whilst the Melbourne Branch of the Royal Mint has received 121,965 ozs. 17 dwts. Again, the returns made by the managers of the several banks showed that they purchased during the year 1,218,094 ozs. 9 dwts. In studying the detailed statistics and comparing them with those of the previous year, it is satisfactory to note an increase in the average yield of gold from quartz, and also an increase in the quantity of stuff treated; there is, however, a a slight falling off in the quartz tailings, mullock, &c., worked in the past year. Mr. B. Smyth calls attention to a cheap and simple, though slow, process for separating gold from pyrites, tailings, and mullock. By stacking such materials with a due proportion of small coal, gum leaves, and other vegetable matter, the gold would be slowly set free, and could then be readily collected. Appended to the volume of statistics is a report by Mr. J. Cosmo Newberry on the work done during the past year in the Melbourne laboratory.

For the preservation of gum arabic from mouldiness Hirschberg adds a little sulphuric acid to the solution, and finds that the mixture retains its adhesive property uninjured after the lapse of eighteen months.

M. DUCROT has published an interesting paper on apparatus for heating with hot air. From the theoretical point of view, the writer concludes that the quantity of calorics furnished by the same apparatus, acting under the same conditions, is greater as the heated air issues at a lower temperature. By the same conditions, he means a constant external temperature, same quantity of fuel disposed in the same manner on the grating, burned in the same time with equal quantities of air. There is, however, for a piece heated with a given weight of fuel per hour, a maximum of temperature corresponding to a determinate quantity of air passing over the heating apparatus.

THE following process was proposed by the late Professo Fuchs for fastening leather upon metal:—One part crushed nutgalls is digested six hours with eight parts distilled water, and strained. Glue is macerated in its own weight of water for twenty-four hours, and then dissolved. The warm infusion of galls is spread upon the leather, the glue solution upon the roughened surface of the warm metal, the moist leather is pressed upon it and then dried, when it adheres so that it cannot be removed without tearing.

STEAM has been proposed for extinguishing fires, by means of large pipes communicating with a boiler, and capable of filling the building with steam in case of a conflagration.

M. JOBERT has instituted researches on the history of digestion in birds: he finds that the gizzard is not exclusively a triturating organ, but a chemical stomach, which secretes an acid liquid.

PROFESSOR OWEN has communicated to the Geological Society the description of a fossil dentigerous bird, which he names *Odontopteryx toliapicus*. From a consideration of all the characters furnished by the remains which were obtained from the London clay of Sheppey, he concluded that it was a warm-blooded feathered biped with wings; that it was web-footed and a fish-eater, and that in the catching of its prey it was assisted by the pterosauroid armature of its jaws. He indicated the characters separating *Odontopteryx* from the cretaceous fossil skull lately described by Professor O. C. March (*Quart. Journ. Science*, No. xxxviii., April, 1873, p. 272), and which he affirms to have small similar teeth implanted in distinct sockets.

REVIEWS OF BOOKS.

A System of Dental Surgery. By JOHN TOMES, F.R.S., and CHARLES TOMES, M.A. London: J. & A. Churchill, 1873.

[THIRD NOTICE.]

(For first and second notices, see No. 11, Vol. I., and No. 3, Vol. II.)

WE have too long delayed the completion of our notice of this work, and we hasten to bring it to a close.

The very interesting question of caries is considered at great length, both in the body of the book and in an appendix, and the subject is most exhaustively treated.

We are told that caries in enamel first attacks the centre of the fibres "much in the same manner as where the destructive agent is intentionally applied to a section prepared for experimental treatment" (p. 295).

In dentine, on the other hand the intertubular substance is the first to suffer. Figure 135 is a good representation of carious dentine as seen in transverse section—the broad rings of the cut ends of the tubes being, as is usual (though not always) very conspicuous. It is well remarked—"Under the microscope the section looks as though it might have been built up of multitudes of tobacco-pipe stems, united by an intervening substance." This is perfectly true as regards a transverse section; but the similarity to tobacco-pipe stems vanishes when the section is longitudinal; and it is then seen, as in normal dentine, that the *tube-wall is indefinitely thin,* though in carious dentine its outline may be bulged and varicose. The authors however leave the readers to suppose that the tobacco-pipe stem is the real condition of the dentine, and they speak of the stems as "rods." We have carefully worked over this subject and we have failed to see these stems except in transverse section; we believe that the marked breadth of the apparent wall is due to the great difference between the refracting power of the tube-wall and the softened intertubular substance.

The authors credit Neumann with having first propounded the great indestructibility of the tube-walls, and they speak of the knowledge of this fact as recent. This, however, was pointed out by Kolliker some fifteen years since, and has been known to the writer of this notice for a longer period.

The causes of caries are very conclusively stated, and the doctrine that the disease, or more generally, the *abnormal condition,* is brought about by external agencies rather than by intrinsic pathological action may be considered as established. This doctrine however is not new; it has been held more or less for the last fifty years; but the evidence has now assumed a more complete and scientific character, and it is elaborately put forward by our authors. There can no longer be any doubt that acids in the mouth, either from the mucus, the fermentation of food, or the saliva are active agents in dissolving out the phosphate of lime from the enamel and dentine; and, though our authors do not commit themselves to an opinion on the point, it is highly probable that there is another agency at work in the caries of dentine, if not of enamel; it is the growth of a cryptogamic vegetable—the *Leptothrix buccalis.* This is found, we believe, on the surface of all carious dentine, growing upon it and burrowing into it. It has been traced into the tubes and the interglobular spaces, and we have frequently found it burrowing among the dentine quite irrespective of its structure. This growth necessarily disintegrates the surface of the dentine into which it pierces; and it may further act chemically, either by catalysis, or by robbing the dentine of some of its elementary constituents.

The subject of odontomes, or hard tooth-tumours, is treated of at some length; and the authors adopt the classification of them proposed by Broca. To this we object, as it is both incorrect and illogical.

The singular complications of hypertrophied tooth tissues forming wart-like masses, either superadded to, or entirely representing the tooth affected, are well described and abundantly illustrated. These, however, have long been understood. The much rarer tumours, involving all the tissues of the roots of the teeth, and forming considerable rounded masses, have but recently been explained, and the knowledge of their true nature is not due to the Messrs. Tomes, nor do we think that they have fairly stated the literary and scientific history of this subject. The elder Mr. Tomes described this tumour as an exostosis, which it certainly is not. It consists of an expansion of the whole of the tissues of the fang—an outer layer of cement, then a thin layer of dentine, and within a large pulp, which may or may not be calcified. The tumour was called by the author, who first described its real nature in this country, a "dilated hypertrophied tooth-fang," and this definition involves a description of the structure which is perfectly true, though it may not involve the whole truth. If the term one-sided or lateral had been added the expression would have been literally accurate and complete. The authors make great stock of this omission, and while disputing over a phrase, fail to give credit for an interesting pathological discovery. Probably the best name for this form of odontome is that suggested to us by the late Mr. C. H. Moore, of the Middlesex Hospital, namely, "hernia of the fang."

In closing this reference to odontomes, we must say that we think the name should be employed to include all the tumours of the hard tissues of the teeth whatever. We take exception to the remark—"it is not usual so to designate, for example, the teeth with enamel-coated nodules." In the first place it cannot be called "usual" or otherwise; for the term odontome is a new one, and its limit has never been defined; and, secondly, we would remark that a tumour is not the *less* a *tumour* because it is small; nor does size affect its pathological interest.

Generally speaking, the diseases of the teeth and their treatment are very well considered, and the practical portion of the volume is admirable. The chapters treating on these subjects are many of them new, and their composition is in favourable contrast with some of the earlier parts of the book. It is simple and to the purpose, and the volume closes with a short and very sensible chapter on anæsthetics. Taken as a whole, the "Manual on Dental Surgery" by the Messrs. Tomes, must be acknowledged a work of great value. It is comprehensive, learned, and full of matter which even the best informed of the profession may often consult with advantage and profit. It should have a place in the library of every member of the profession. S. J. A. S.

Practical Hints for the Laboratory and Operating-Room.

By THOMAS FLETCHER, F.C.S.

THIS work will prove useful, chiefly on account of the suggestiveness of much of its contents. We are indebted to Mr. Fletcher for readily telling all that he knows that may be useful to the dental profession. Many new ideas will occur to the reader of this little book, and we trust ere long to see a second and enlarged edition, containing communications and fresh notes in response to the invitation inserted in the preface by Mr. Fletcher.

WE hear that a French translation of Oakley Coles' "Dental Mechanics" will shortly be published in Paris.

WE are glad to be able to announce that "A Manual of Comparative Anatomy and Physiology of the Teeth" is in preparation by Mr. Charles S. Tomes.

A NEW dental journal will, we hear, be shortly commenced in Paris, edited by Mr. Mordaunt Stevens. The first number will probably appear in January, 1874.

THE LAWS OF TRANSMISSION OF RESEMBLANCE FROM PARENTS TO THEIR CHILDREN.

BY JOHN STOCKTON HOUGH, M.D., OF PHILADELPHIA.

(THE NEW YORK MEDICAL RECORD.)

Infantum plus ex matre quam a patre habere (*a*).
Mares similes matri, fœminæ similes patri generentur (*b*).
Mas avo materno similis ; Fœmella avo similis paterno (*c*).

THE question of resemblance of children to their parents is one in which many ancient and a few modern authors have found a field for much close observation and profound philosophy, carrying their discussions and deductions to all possible degrees of differentiation and detail. Some of their reasons and conclusions as to causes are scarcely plausible, but many of them bear evidence of close observation and careful consideration, for modern research has in several instances discovered proximate causes which fully corroborate these ancient opinions.

Aside from the physiological and philosophical, this question of resemblance has a practical bearing, and that is in regard to the estimate one may make of the prospect individuals may have of longevity from an examination of their family history, determining from this their resemblance to their ancestors, and judging of their likelihood or predisposition to hereditary or acquired affections (*d*).

In order to avail one's self of the advantages of a knowledge of this subject, it is necessary to be conversant with the laws which govern the transmission of resemblance, and this is the province of our paper to determine. Ludovicus Mercatus (*e*) says that there are three similitudes of children to their parents. *Prima quidem est in specie, secunda in sexu; tertia verò et ultima in proprietatibus individualibus.* The last division comprehends all that we shall have to say on the subject. Several authors have given us works on hereditary

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(*a*) Galen apud Jacob Ruffus, De Muliebribus, Lib. i., c. vi. Ext. in Isrel Spachius, Harmoniæ Gynæciorum, p. 171, b.

(*b*) Socrates apud Aristotelem, De Generat. Animal., Lib. iv., c. iii., Duval's Aristotelis Opera Omnia, &c. Paris, 1654, fol., vol. ii., p. 675, d.

(*c*) Ludovicus Bonaciolus, Enneas Muliebris, Ext. in Spachius, op. cit., p. 145—6.

(*d*) I have a case in mind, in which a professor in one of our first Medical Schools, who was a medical director of an assurance company, withheld his decision on an application for a large sum until the question of physiognomical resemblance to either parent was settled.

(*e*) De Mulierum Affect., Lib. iii., cap. vi. Spachius, op. cit., p. 1007—9—10.

diseases, some of which I have named below (*f*). We cannot enter very far into this feature of resemblance, and have therefore cited only such cases as bear upon the practical part of the topic under discussion.

It is the object, then, of this paper to bring before the reader such facts as are at hand to determine the general laws which are brought to issue in the following questions :—

1. Do children derive their resemblance and inherit diseases more frequently or more easily from their mothers than from their fathers ?

2. Are males more apt to inherit the diseases of their mothers, and females those of their fathers ; or is the reverse the case ?

3. What are the laws of physical and physiognomical inheritance ?

4. Is there any constant relationship between the physiognomical resemblance of an individual to an ancestor, and the likelihood of this individual being afflicted or dying of the same constitutional or acquired disease ? If so, is a physiognomical resemblance an indication of a likelihood to the same constitutional affections, or the reverse ?

The various aspects of resemblance by relationship are as follows :—

In general :—

1. Children resemble their mothers more than their fathers.
2. Males resemble their mothers, and females their fathers.
3. When children do not resemble their parents, but their grandparents, males resemble their maternal grandfather, and females their paternal grandmother.

Exceptionally :—

1. Children resemble their fathers more than their mothers.
2. Males resemble their fathers, and females their mothers.
3. Male resembles paternal grandparent, female maternal grandparent.

(*f*) Mundinus Mundinius wrote a work (De Genitura pro Galenicis adversus Peripateticos, etc., Venetiis, 1622, 4to) in which he discusses—In qua nova præsertim dogmata spectantia ad fœtuum generationem, similitudines, morbos, hæreditarios, nota corporis, facultatem formatricem calidi nativi, animarumque corruptibilem originem, refelluntur, etc. etc.

Desmutius de Mara wrote on Pathologia Hæreditaria Generalis, Sive, de Morbis Hæreditariis. Dublin, 1619.

Robertus Lyonnet published a dissertation, De Morbis Hæreditariis, Lutetiæ, 1646, 4to. Prosper Lucas, of recent times, has given us a work on Physical Transmissions, Traité Physiologique et Philosophique, l'Hérédité Naturelle, Paris, 1847—50. None of these, I regret to say, have been within my reach.

4. Offspring resembles male by whom female was previously impregnated more than its natural father.

I propose to discuss the laws of resemblance as laid down in the three first hypotheses.

Aristotle (*g*) teaches that in general children resemble their fathers more than their mothers, and Harvey (*h*) theorises as to the cause. Ambrose Paré (*i*) is of the same opinion, and advances as a reason, that "in concubitu" the mind of the woman is more fixed on the man than that of the man on the woman. This explanation may hold in a few exceptional cases, for we not unfrequently read of cases in which the female produces offspring resembling a male of whom she may have been enamoured, but who was not the father of the product. This influence of imagination or impressions on the mother is familiar to all, in the practice of Jacob, who placed rods of different colours before his ewes that they might bear speckled lambs. (Gen. chap. xxx., vv. 37—41.) This view of the matter, however, is not to be taken as the rule, any more than the curious notion of Dr. Erasmus Darwin (*j*), who ascribed the large proportion of male births in Rome at a certain period to the prevalence of certain ornaments at the orgies of Bacchus.

Prichard (*k*) says that "children resemble, in feature and constitution, both parents, but I think more generally the father. In the breeding of horses and oxen great importance is attached by experienced propagators to the male. In sheep it is commonly observed that black rams beget black lambs. In the human species, also, the complexion chiefly follows that of the father; and I believe it to be a general fact that the offspring of a black father and a white mother is much darker than the progeny of a white father and a dark mother."

The son is more likely to have the moral excellence of his mother, while his bent or inclination or genius (vocation best suited) will come from the father, modified in quantity and quality by the mother. The general mental qualifications will be of the type (kind) of the father, modified in quantity and quality by the mother. Sons are thus usually able to follow their father's vocation better than others of a different character.

(*g*) Lib. de Generat. Animal. Lib. iv.

(*h*) Anatomical Exercises on the Generation of Animals, etc. London, 1651. Sydenham Soc. Edit. Lond. 1847.

(*i*) De Hominis Generat., cap. i. Ext. in Spachius, Harm. Gynæciorum, p. 404, c.

(*j*) Zoonomia; or the Laws of Organic Life, in 2 vols. Dublin, 1800. Vol. i., p. 584, et seq.

(*k*) Researches into the Physical History of Mankind, vol. ii, p. 551.

Sir Anthony Carlisle says that a schoolmaster informed him that his scholars whose fathers were mechanics learned mathematics better than classics, while those whose fathers were classical scholars learned foreign and dead languages better than mathematics.

Those who maintain that children derive more of their qualities from their fathers than from their mothers have given no substantial reasons nor sufficient number of examples in support of their position to convince us that this is the general law. The truth of the matter seems to indicate that such cases as appear to conform to this view are exceptional, and often come from coupling unequally bred individuals, the male in such cases having the prepotency in transmission. In breeding animals this fact is often taken advantage of as a matter of economy. One well-bred male may transmit his superior qualities to a large number of offspring in a single season, while the female can give any qualities she may possess to but few, generally only one product. .

In selecting animals for breeding, "economical purposes have made the male in general the most important, simply because he serves for a considerable number of females. The consequence of this has been that more attention has been paid to the blood or purity of race of the stallion, bull, ram, and boar than to that of their females ; and hence it may be the case that these males more frequently transmit their qualities to the offspring than to the inferior females with which they are often made to breed. But this circumstance can scarcely be adduced as a proof that the male, *cæteris paribus,* influences the offspring more than the female" (*l*).

According to Mr. Louatt (*m*), the relative influence of each parent in breeding on the offspring depends most upon the mother, where the parents are equally well bred, other things being the same; but the high-bred male pairing with the half-bred female will have a preponderating influence on the offspring (*n*). Socrates and Coriscus are of the opinion that children generally resemble their mothers more than their

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(*l*) Allen Thomson, Cyclop. Anat. and Phys., vol. ii., p. 472.

(*m*) Stock Manual, 1844, p. 524.

(*n*) Galenus etiam hujus rei gratia, eleganter monet, *infantem plus ex matre quàm à patre habere* * eo quod primum semina menstruis augeantur, mox his in utero nutriatur fœtus, rursus natus alatur lacte ; et quemadmodum quævis stirpes plus ex terra quàm parente planta habent, ita infantes plus ex genitrice. — Apud Jacob Ruffus, De Muliebribus, Lib. i., c. vi. Ext. in Spachius, Gynæciorum, p. 171, b.

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* Italicised by the writer.

fathers, and this appears to be in harmony with the teaching of our most eminent physiologists and scientists.

Linnæus conceived the character of the male parent predominated in the exterior parts both of plants and animals, and the same opinions have been generally entertained by more modern naturalists.

Mr. Knight (*o*) seems to differ somewhat from this opinion of Linnæus, "for I have observed," says he, "that seedling plants, when propagated from male and female parents of distinct characters and permanent habits, generally, though with some few exceptions, inherit much more of the character of the female than of the male parent, and the same remark is applicable in some respects to the animal world."

"Mr. Cline, the eminent surgeon, has observed," says Mr. Knight (*p*), "in a communication to the Board of Agriculture, that if the male and female parents differ considerably in size, the dimensions of the fœtus at the birth will be regulated much more by the size of the female than of the male parent."

According to Earl Spencer (*q*), Mr. Cline believes "that it is always desirable that the male should be smaller than the female." The Earl is of the opposite opinion, and I think justly so, if we are guided by the fact that males are always naturally larger than females.

The comparative influence of the male and female in transmitting hereditary disease is one of great interest, particularly in regard to syphilis. In this last-named affection authorities differ greatly from the view of M. Cullerier (*r*), who believes that it is never transmitted from the father to his offspring, to that of Mr. Hutchinson (*s*), who is of the opinion that the father can transmit the disease in as severe a form as the mother. M. Cullerier is supported in his view of the relative power of transmission by the one or the other parent, by MM. Notta (*t*) and Follin (*u*). Professor Boeck (*v*) and Mr. Morgan (*w*) believe that the father rarely transmits the dis-

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(*o*) On the Comparative Influence of Male and Female Parents on Offspring, Philos. Trans., 1809, p. 393.

(*p*) Idem, p. 395.

(*q*) Journ. Royal Agricul. Soc., 1840, vol. i., pt. iii., p. 25.

(*r*) Mémoires de la Soc. de Chir. de Paris, t. iv., 1855; quoted in Brit. and For. Med. Chir. Rev., v. xix., pp. 156—8, 1857; also, Archiv. Gén. de Méd., Sept., 1854.

(*s*) Dis. of Eye and Ear in Inherited Syphilis, 8vo, Lond. 1863, p. 208.

(*t*) Archiv. Gén. de Méd., March, 1860.

(*u*) Med. Times and Gaz., Aug., 1860, pp. 116—117.

(*v*) Amer. Jour. Syphilog. and Dermat., Jan., 1870, p. 16.

(*w*) Practical Lessons in the Nature and Treatment of Contagious Diseases, Lond., 1872, p. —.

ease, and Dr. John S. Parry (x) says, after a very careful review of these opinions, and well-weighed deductions from his own observations and experience :—"I cannot but believe that the mother is much more likely than the father to transmit syphilis to the children, and that, as Mr. Morgan says, the influence of the father has been exaggerated."

Mr. J. B. Thomson, in his papers "On the Comparative Influence of the Male and Female Parent upon the Offspring" (y), advances the opinion that it is the male chiefly who is concerned in the transmission of hereditary disease. This *opinion,* however, is not supported by facts which warrant us in accepting this view of the matter, and is directly opposed to the deductions from the many cases detailed by Mr. Sedgwick (z) and others cited in this paper.

In hospital practice Dr. Garrod (a) found gout to be hereditary in fifty per cent. of the cases observed, and in private practice the per-centage was still higher. He cites a case in which it had been hereditary for upwards of four centuries (probably fifteen generations), the eldest son having been invariably afflicted with the gout when he came into possession of the family estate. Scudamore (b) records 522 cases of gout, in 332 of which it was hereditary.

Rheumatism is also subject to hereditary transmission.

(*To be continued.*)

Dr. Mapother mentions in the *British Medical Journal's* report of the opening of the Royal College of Surgeons of Ireland, that according to that excellent poem, the "Medical Review," by Dr. Gilborne (1775), in which about 200 Irish doctors are noticed, nearly all the surgeons practised midwifery. Many of them insisted on maternal nursing, and in three days milk was always on draught, never in bottle. One of the original surgeons of the Meath Hospital is alluded to in the following lines of the poem :—

> "With well contrived utensils, good Hawkshaw,
> An aching, useless, hollow tooth can draw,
> With straight, diverging, or converging fangs,
> And give the jaw and tender gum no pangs ;
> But if the pain proceed, in young or old,
> From scurvy, rheumatism, or humours cold,
> He sooner would the expected fee forego,
> Than make a breach in fair enamelled row."

(x) Two Lectures on Inherited Syphilis, Philad. Med. Times, 1872 ; and Pamphlet, pp. 35, 12mo, Philad., 1872, pp. 23—27.

(y) Edin. Med. and Surg. Journ., p. 501—4, 1858-9.

(z) Op. cit., p. 210.

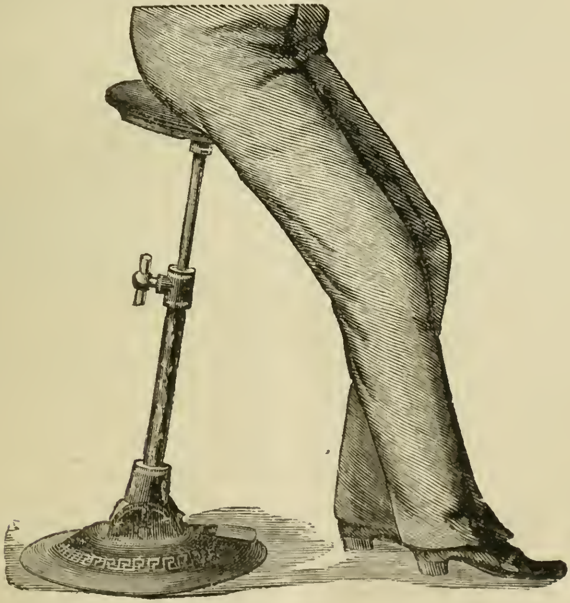
(a) The Nature and Treatment of Gout and Rheumatic Gout, p. 251—3, 1859.

(b) A Treatise on the Nature and Cure of Gout and Gravel, 4th edit., p. 55, 1823.

NEW INVENTIONS.

DR. LYONS' ADJUSTABLE STOOL.

We have been invited by Mr. Rutterford to inspect one of Dr. Lyons' new dental rests. The base is cast-iron and the shaft is attached to it in such a way that it may be changed from a perpendicular to any desired angle, and made fast there by means of the treadle. (See woodcut.) The top revolves, and may be raised from 22 to 36 inches, and made fast at any point. According to the advertisement concerning this invention, "the handle of the screw is nickel-plated, and the whole is neatly japanned and decorated in gold and flowers, making it an ornament to the office."



We have no wish to question the good taste of Dr. Lyons, but we decidedly cannot accept the verdict of the maker and advertiser, when it is stated that this adjustable stool will be "an ornament to the office." The japanning is rough, and the "gold and flowers" hideous. Morrison's engine is also decorated with "gold and flowers;" there seems at the present time in America a superabundance of *artists* who can paint in "gold and flowers." We had the same state of things in this country once, when tin teatrays were largely in use. At the present time, however, this section of the artistic profession devotes its energies to the decoration of iron bedsteads, perhaps American manufacturers could turn the talents of these gentlemen to account in the same direction.

This seat is, notwithstanding its decoration, a very useful appliance for dentists, especially in working with the burring engine, and our thanks are due to Dr. Lyons for adding yet another invention to the appliances of the dental surgeon.

A NEW DENTAL OPERATING CHAIR.

We have examined at Mr. Rutterford's a new pattern operating chair that he is now bringing out. It is in some respects like the "Harris" chair, but less bulky, and neater in structure. The two principal novelties are the attachment of the arms to the side of the seat, so that as the seat is raised the patient is not disturbed; and beyond this advantage, the base is so arranged that, although the whole chair may be at any angle of which it is capable, the operator is enabled to entirely rotate it without bringing the seat back again to its horizontal position.

The footstool is attached to the chair, and follows the movement backwards. When in the first position the footstool is only three inches from the ground at its greatest elevation; the front edge is twenty-one inches from the floor.

The height of the seat ranges from eighteen to twenty-one inches.

This chair is, we understand, being made for Mr. Rutterford in England, and certainly possesses all the characteristics of English workmanship.

S. S. WHITE'S TEETH.

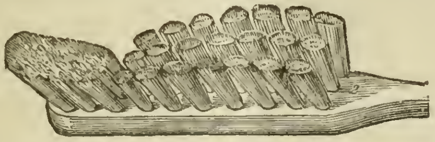
We have received from Messrs. Smale, of Great Marlborough Street, samples of a new supply of White's teeth. They are made with the platinum pins much thicker and longer than is usual, and will be of greater service for vulcanite work than the short-pinned teeth formerly made by the last-named firm.

TURPIN'S RUBBERS.

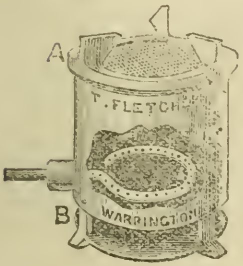
We are glad to be able to report favourably of this new rubber; the pink seems exceedingly good, and wears very well in the mouth.

DR. COFFIN'S TOOTH BRUSHES.

We have received from Mr. G. W. Rutterford, of Poland Street, specimens of Dr. Coffin's new pattern tooth-brushes. (See wood-cut). They are novel in design, and very serviceable in use, cleaning the inter-dental spaces better than any other brush that we have seen. We are sorry that Dr. Coffin has thought it desirable to register the pattern, but as they are not sold at a "prohibitive" price, the registration is a matter that concerns that gentleman more than any one else.



FLETCHER'S NEW LOW TEMPERATURE BURNER.



This burner gives a range of heating power from a gentle current of warm air to a bright red heat, and is so perfectly under control that a common glass bottle may be placed on the tripod without protection, and heated to any required temperature without the slightest risk of fracture. In practical use it dispenses with the necessity for drying-closets, sand, and water-baths, &c.

For very low temperatures the ring must be lighted through the opening B; this causes a current of warm air to rise through the gauze above. For higher temperatures the light must be applied on the surface of the gauze A, which will give a large body of clear blue flame. A special pattern is made with a blast tube, by which the flame on the surface can be concentrated and urged until it gives almost a clear white heat, the temperature depending on the air supplied through the blast tube and the quantity of gas consumed.

ASH AND SON'S CORUNDUM WHEELS FOR THE BURRING ENGINE.

We have received from Messrs. Ash and Sons, of Broad Street, specimens of corundum wheels, made and mounted by them for use with the Morrison burring engine; the texture of the wheels is uniform, and they are set up with great care, so that they may run perfectly true in the hand-piece.

DENTAL HOSPITAL OF LONDON BUILDING FUND.

FOURTH LIST OF SUBSCRIPTIONS.

We have much pleasure in acknowledging the following additional subscriptions for the Building Fund :

				£	s.	d.
Amount already received				2562	15	0
Dowager Marchioness of Westminster, per W. F. Forsyth, Esq.				50	0	0
P. S. I., per Dean of Exeter, per E. Saunders, Esq.				50	0	0
Mrs. Brassey, per E. Saunders, Esq.				25	0	0
J. D. Allcroft, Esq., Lancaster Gate				21	0	0
J. Reiss, Esq., South Kensington				10	10	0
Charles Roberts, Esq., Ramsgate				10	10	0
Hon. Mrs. Magniac, Chesterfield House, per W. F. Forsyth, Esq.				10	10	0
Henry Whiting, Esq., Wandsworth, per M. Harding, Esq.				10	10	0
Miss Burnester, per E. Saunders, Esq.				5	5	0
J. P. Haywood, Esq., Hyde Park Place				5	0	0
Mrs. Charles Waring, Norfolk Street				5	0	0
M. A. Bass, Esq., M.P., Eaton Square				5	0	0
John Eden, Esq., Wilton Crescent, per E. Saunders Esq.				5	0	0
Viscount Southwell, per Joseph Rogers, Esq.				5	0	0
E. M., per M. Harding, Esq.				5	0	0
John Rohdke, per M. Harding, Esq.				4	0	0
J. E. Mortimer, Esq., Regent Street				3	3	0
Lady Wriothesley Russell, per E. Saunders, Esq.				3	0	0
Arthur Lewis, Esq., Regent Street, per M. Harding, Esq.				2	2	0
Lord Arthur Russell, per W. F. Forsyth, Esq.				2	2	0
Rev. Thomas G. Hall, Paignton, per J. T. Clover, Esq.				2	2	0
Lady Adam, per W. F. Forsyth, Esq.				2	0	0
Mrs. Luther Holden, per J. Rogers, Esq.				1	1	0
Edwin Williams, Esq., Croydon				1	1	0
Lady Vassall, Hyde Park Gardens, per E. Saunders, Esq.				1	1	0
Miss Rust, Huntingdon, per E. Saunders, Esq.				1	0	0
Sir Tatton Sykes, per J. Rogers, Esq.				1	0	0
Anonymous, per E. Saunders, Esq.				1	0	0
Per Thomas G. Palmer, Esq., Cheltenham :—						
Thomas G. Palmer, Esq., Cheltenham	50	0	0			
H. H.	50	0	0			
T. W. Gascoigne Palmer, Esq.	10	0	0			
W. J. Smith, M.D., Weymouth	2	2	0			
Mrs. Godfrey Faussett, Cheltenham	1	6	6			
George Clarke, Esq., Worcester	1	1	0			
H. W. Ripley, Esq., Leeds	1	1	0			
Rev. George Griffiths, Cheltenham	1	1	0			
Miss Tapp, Cheltenham	1	0	0			
Miss E. Wakeman, Cheltenham	1	0	0			
				118	11	6
Total				2929	3	6

A CASE OF REAL DISTRESS.

To the Editor of the MONTHLY REVIEW OF DENTAL SURGERY.

SIR,—Will you allow me, through the medium of your columns, to thank most warmly those members of the profession who have so kindly and liberally subscribed towards the fund now being raised for the widow of the late Mr. Cox Smith. At the same time may I earnestly entreat those who have not yet answered my appeal to assist my widowed friend, if only with a few shillings, in continuing the struggle which for nearly four years she has carried on so bravely by herself. May I also add for the information of those gentlemen who were not acquainted with the late Mr. Cox Smith, that he was Dentist to the Rochester, Chatham, and Strood Dispensary, and that articles by him appeared in the *Quarterly Journal of Dental Science* for 1859. He died in March 1870, leaving a family of five children totally unprovided for.

Subscriptions will be most thankfully received by myself at 9 Belsize Park, N.W., or by S. A. Ridpath, Esq., 33 George Street, Hanover Square, W.

I am, Sir, yours faithfully,

E. M. RIDPATH.

The following contributions are acknowledged with many thanks :—

	£	s.	d.
Saunders, E., Esq.	5	0	0
Stevenson, W., Esq.	5	0	0
Ridpath, S. A., Esq.	5	0	0
Wills, F., Esq.	5	0	0
King, E. H., Esq.	2	2	0
Rymer, S. L., Esq.	2	2	0
Longhurst, S. and B., Esqrs.	2	2	0
Purland, T., Esq.	2	2	0
Watts, W. M., Esq.	2	0	0
Turner, J. Smith, Esq.	1	1	0
Hatfield, —, Esq.	1	1	0
Ridpath, J. L., Esq.	1	1	0
Chatu, G., Esq.	1	1	0
Reed, T., Esq.	1	1	0
Margettson, W.	1	1	0
W. H. W.	1	1	0
Bigwood, F., Esq.	0	10	0
Hart, Mrs.	0	10	0
	38	15	0

SOME improvements in photo-lithography have been effected by M. Paul. The paper is coated with a layer of white of egg beaten up and mixed with a concentrated solution of bichromate. When dry it leaves a hard smooth surface. After a sufficient insolation under the negative, the paper is covered with lithographic ink, then immersed in cold water to dissolve out the unchanged albumen, which is then removed with a fine sponge.

NATIONAL DENTAL HOSPITAL.

A THEATRICAL performance in aid of the funds of this hospital will be given on Tuesday, December 16, at St. James's Theatre. We fear this notice will be too late to admit of our readers availing themselves of that opportunity of helping this useful charity, but we trust it may induce some to render help in other ways to an institution that is greatly in need of assistance, and that has to some extent been rather neglected of late by the charitable part of the community. It has a debt of £300 to pay off, and it may fairly, we think, look for assistance from the members of the profession and their friends.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AT the Examination held on the 18th and 19th November, Mr. Ashley Gibbings, L.D.S., of the Dental Hospital and King's College, passed for the Membership.

APPOINTMENTS.

Mr. CHARLES J. FOWLER, L.D.S., to be Surgeon-Dentist to the Birmingham and Midland Hospital for Sick Children, *vice* Mr. Thomas Howkins, M.R.C.S., retired.

Mr. W. T. BRADLEY, L.D.S., to be Surgeon-Dentist to the Chichester Infirmary.

Mr. RICHARD BROWN has been elected Portreve of Tavistock.

Mr. F. WOODHOUSE BRAINE, F.R.C.S.E., has been appointed Chloroformist to the Charing Cross Hospital.

STRUCK with the inconveniences resulting from the use of toilet soaps with a base of potash or soda, M. Bonnamy has prepared alumina soaps. These are, as a matter of course, neutral, and free from causticity, and being insoluble in water, their detergent action is simply mechanical, not chemical.

OZOKERIT, which is now largely used in the manufacture of candles, is found in beds in the sandstone of Slanik, in Moldavia, in the neighbourhood of mines of coal and of rock salt; it has also been discovered in the Carpathians. The material in its crude state is brown, greenish, or yellow; it is translucent at the angles, and its fracture is resinous. It is naturally brittle, but when softened can be kneaded like wax. It blackens on exposure to the air. It becomes negatively electric on friction, and exhales then the aromatic odour of a hydrocarbon. It melts at the low temperature of 66°. Its illuminating power is such that 754 ozokerit candles give a light equal to 891 of paraffin, or 1,150 of wax.

HOSPITAL REPORT.

DENTAL HOSPITAL OF LONDON.

Cases Treated from Nov. 1 to 30, 1873.

Extractions: Children under 14	398
Adults	437
Under nitrous oxide	90
Gold stoppings	69
White foil ditto	54
Plastic ditto	133
Irregularities of the Teeth treated surgically and mechanically	48
Miscellaneous cases	224
Advice cases	44
Total	1,497

Claude Rogers, *House-Surgeon.*

We regret that owing to the pressure on our space this month we are compelled to postpone the report of the Odontological Society, the Dental Students' Society, and our translations from the *German Quarterly Journal of Dental Science.*

"THE TONGUE NOT ESSENTIAL TO SPEECH."

A correspondent who was induced by a review of Mr. Twisleton's work to refer to old papers having reference to the case of Margaret Cutting, of Wickam Market, forwards the following extract from the *Ipswich Journal* of March, 1742:—"Upon examining her mouth I found part of a tongue about an inch and a half in length, in breadth about half an inch. It is seemingly confined by a small part of the frænum; the forepart of the tongue is very thin, but gradually thickens towards the œsophagus; it lies in an oblique manner, covering part of the salival glands on the left side; those on the right, for the want of the common pressure of the tongue, appear large and bulbous. Upon opening the mouth wide, the tongue may be plainly observed to move backward, and, as she shuts her mouth, to come forward; and upon introducing my finger into her mouth near to the œsophagus, I could move it either way easily. Her speech is very intelligible, but her voice low, and she speaks a little through her nose, which is owing to the want of the uvula to help articulation." This statement, he remarks, differs from the accounts in the "Philosophical Transactions," which represent the loss of her tongue as complete, and if it be correct rebuts the theory that mutilation destroys the power of speech, whereas total loss has not always that result.

DENTAL SURGERY.

To the Editor of the MONTHLY REVIEW OF DENTAL SURGERY.

SIR,—In your report of the meeting of the Dental Students' Society, held on November 10th last, Mr. Willis says, "that where there was actual loss of one tooth there was practically loss of two teeth, and this was seen in the loosening of an antagonising tooth;" and I am reported to have "reminded Mr. Willis that this could not take place *in the front of the mouth*, as there each tooth came in contact with two."

Now, of course this is simple nonsense, as the teeth at the *back* of the mouth each articulate with two, just as much as those at the front do. But further, the antagonising of the back teeth is of such a nature that it would exert a much greater influence in retaining the opposing ones in the proper position; because in the front teeth it is only the anterior and posterior surfaces which touch, whereas in back ones it is the *grinding surfaces* which are in contact.

If you will kindly set this matter right, you will oblige,

Yours truly, M. C. STORER BENNETT.

17 George Street, Hanover Square, Dec. 11, 1873.

[The report appeared as it was sent by the Secretary of the Dental Students' Society.—ED. M.R.D.S.]

To Correspondents.

ALL communications intended for the Editor should be addressed to the care of Messrs. SMITH, ELDER, & Co., 15 Waterloo Place, Pall Mall.

All inquiries respecting Advertisements and Subscriptions should be sent to GEORGE BUTCHER, 4, Crane Court, Fleet Street, E.C.

In Demy 8vo, price 12s. 6d.
THE DISEASES OF THE TONGUE:
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By W. FAIRLIE CLARKE, M.A. and M.B. (Oxon), F.R.C.S., Assistant-Surgeon to Charing Cross Hospital.
"Mr. Fairlie Clarke has produced a work of real value. . . . As to treatment, the directions given are full, precise, and sensible."—*Edin. Med. Journ.*
HENRY RENSHAW, 356 Strand.

Second Edition, revised and enlarged, with Engravings, 8vo, 12*s.*
INJURIES AND DISEASES OF THE JAWS.
JACKSONIAN PRIZE ESSAY OF THE ROYAL COLLEGE OF SURGEONS.
By CHRISTOPHER HEATH, F.R.C.S., Surgeon to University College Hospital; Teacher of Operative Surgery to University College.
J. & A. Churchill, New Burlington Street, London, W.

HOARSENESS, LOSS of VOICE, and STRIDULOUS BREATHING. By MORELL MACKENZIE, M.D., 8vo, 3*s.* 6*d.*—Churchill.

The LARYNGOSCOPE in DISEASES of the THROAT. By MORELL MACKENZIE, M.D. 8vo,, 6*s.* 6*d.*—Longmans.

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THE MONTHLY REVIEW
OF
DENTAL SURGERY.

No. VIII. JANUARY, 1874. Vol. II.

DENTAL SURGERY IN GERMANY.

Our readers will probably be interested in the information we give at another part of this month's *Review* as to the Regulations for Dental Surgeons in Germany. Though they have made no very great advance in either surgical or mechanical dentistry, they are adopting a system of education that must in the future produce men who will take a high position in the science of our department, and possess a thoroughness of knowledge that we have already learned to associate with the German scientific worker. Already Germany has produced some of the best pathological work that we have in the literature of dental surgery, and we may fairly expect that with increased educational facilities the purely manipulative part of our speciality will be studied with the same earnestness of purpose and ability that have hitherto distinguished them so much in the investigation of purely scientific subjects.

The regulation as to general education is one that must sooner or later be adopted in this country, for there is probably no better means of raising the standard—socially—of those who enter the dental department of surgery.

The range of purely medical subjects included in the German curriculum is somewhat more extended than our own, but in all essentials it is substantially the same. The organisation of the examining board is scarcely, however, so good as that of the Royal College of Surgeons. As Germany comes more into contact with other countries (in matters dental), this will probably be modified.

The existence of a scale of taxed fees, is a novelty to us in this country, but it is a novelty that we could perhaps very willingly see introduced. In many cases it would be of infinite service in checking a mischievous class of practice, and in no instance could it be any injury to the truly professional practitioner.

We must not forget, in comparing the German scale of fees with the lowest English scale, the great difference that exists in the value of money in the two countries.

ON NECROSIS OF THE JAW.

A CLINICAL LECTURE DELIVERED AT THE DENTAL HOSPITAL.

BY CHARLES S. TOMES, M.A.

In the short clinical lectures which I propose occasionally to give, it is not my intention to attempt any exhaustive treatment of the subjects discussed, but merely to direct your attention to salient points in any cases which may from time to time arise.

Among the patients at present attending this hospital is one whose aspect must be familiar to all of you, as his visits have been frequent, and the large amount of swelling of the face cannot have failed to arrest your attention. He is suffering from a partial necrosis of the lower jaw, and I propose to speak of some few points of peculiarity in his case, as well as to mention a few other cases interesting in one respect or another. Necrosis of the jaw varies greatly in its extent and severity; it ranges from the mere exfoliation of a few thin scales of injured bone, from the edges of the socket of an extracted tooth, to entire destruction of the whole lower jaw, though, as these latter cases will rarely come under the notice of the dental surgeon, and the former do not require much treatment, it is with cases of medium severity that we are most concerned, and the patient now under notice presents an instructive example of such a case.

About a year ago he describes himself as having had severe toothache, followed by swelling, and ultimately by a free discharge of matter. Nothing was, however, done until two months ago, when the first left lower molar was extracted. I presume that it was carious. Three weeks later the stump of the second molar was extracted, but with no effect upon the swelling, nor upon the discharge, which still continued. It being pretty obvious that there was dead bone, Mr. Claude Rogers made an incision between the cheek and the teeth, and breaking through a thin shell of new bone, reached a sequestrum held within it. The swelling continued to be very great, and little relief was afforded, even when some three weeks ago several large pieces of necrosed bone, one of which appeared to contain a part of the inferior dental canal, had been removed. A fortnight ago, when probing the wound, I found that the probe struck against a hard smooth vertical body at the back of the jaw. At first I thought I was touching the ascending ramus, but the sensation of extreme hardness and smoothness suggested the idea that it might be a misplaced tooth; and on my mentioning this to Mr. Rogers, I found that the same idea had occurred to him. Further examination strengthening this belief, I attempted to dislodge it with a bent elevator, and after some trouble succeeded in removing a perfectly sound wisdom tooth, which had never been erupted, but lay on the inner side of the ascending ramus of the jaw.

I confidently predicted that the jaw would at once get well after the removal of this buried tooth, but such was not the case, for the note given me, five days after its extraction, is, "considerable œdema of left side of face and ascending ramus of jaw; very little pain; copious discharge of tolerably healthy pus."

Now the question arises, what was the original cause of the mischief? Was it ordinary alveolar abscess proceeding from carious teeth, or was it due to retarded eruption of the wisdom tooth?

I incline to this latter supposition, as the inflammation attendant upon difficult eruptions of a wisdom tooth is usually very violent, and is not uncommonly followed by necrosis, pyæmia, and death has even been known to result from this cause.

But whatever may have been the primary cause, it is very unlikely that it would have ever got well so long as so prolific a source of irritation as this wisdom tooth, jammed against the ramus, was left there; and it illustrates well the necessity of making exceedingly careful examinations with the probe, for I had seen and examined this case several times without having the smallest suspicion of the presence of a buried tooth. If our patient had been a healthy subject, it is probable that the operation would have been followed by complete relief. Unfortunately, however, he is the subject of constitutional syphilis, in which condition slight injuries are very apt to be followed by necrosis, so that it may be that a fresh sequestrum will separate before he gets well.

As there is now no sequestrum of any size to be felt, I am disposed, if any more small fragments should necrose, to avoid mechanical violence in the removal, and to dissolve them away by the use of aromatic sulphuric acid, which is strong enough to dissolve necrosed bone, though too dilute to destroy living tissues.

And I may mention that this is an excellent manner of treating those exfoliations of minute fragments of the alveolus which run so tedious a course in cachectic persons. A patient has for the last two years been at intervals coming to me on account of exfoliation of the anterior alveolar plate over the upper incisors and canines. Nothing seemed to arrest it; piece after piece came away, or rather became such a source of irritation, that I had to cut down on it and remove it; but after a few applications of sulphuric acid the gums have entirely healed (which for two years has never before been the case), the sinuses constantly having remained open. It is a matter of doubt what course we shall pursue when a patient afflicted with constitutional syphilis presents himself with an alveolar abscess. Whether we remove the tooth or not, necrosis is not unlikely to follow; and some authorities consider that any operation is unadvisable, as increasing the tendency to further mischief. Had our patient applied for relief at an earlier date and had his teeth extracted, his case would have afforded some support to this view; but as it happened, he did not, and the necrosis had already taken place when the first tooth was extracted. For my own part, though fully aware that necrosis is very prone to follow upon mechanical injury in a syphilised patient, yet, inasmuch as it also often follows upon alveolar abscess even in persons not so constitutionally tainted, I should have little or no hesitation in extracting a tooth or a stump from a syphilitic patient when the general swelling and tenderness around it seemed to threaten that necrosis was about to be the result of alveolar abscess, which latter I believe far more likely to be hurtful than mere surgical injury, such as would be inflicted by the extraction of a tooth; and I need hardly add that the prevalent idea among medical men that a tooth should not be extracted while inflammation around it is active is wholly fallacious.

A purely local cause, such as a blow, an alveolar abscess, or the extraction of a tooth, may lead to necrosis in any person, but it is far more likely to do so in the presence of constitutional taints, such as struma or syphilis. Other causes of necrosis are to be found in applications of arsenious acid which have escaped from the cavity of a tooth, in exposure to the vapours of phosphorus, mercurial salivation, cancrum oris, &c. And it may occur as a sequela of exanthematous fevers, and, finally, there may sometimes be no assignable cause whatever, as was the case with a patient from whom I removed a large sequestrum at this hospital about a year ago, containing the canine bicuspids and first molar (all of which were perfectly sound) and the corresponding portion of the inferior dental canal.

A case of considerable interest to the dental surgeon is related in the *Medical Union* (*a*), an American periodical of homœopathic proclivities.

The history of the case is, in brief, thus: A lady who had hitherto enjoyed good health, and was free from scrofulous or syphilitic taint, having suffered from toothache, went to a dentist, who applied arsenic to an exposed nerve in a lower molar tooth; the arsenic was removed next day, but the patient, although suffering from severe toothache, neglected to attend for nearly a week.

She then went to another dentist, who found that some exfoliation of the anterior wall of its socket was taking place; the nerve in the anterior fang still, however, being alive, he applied arsenic to it again. Three days after this, although the parts all round the tooth were exquisitely tender, it was filled with amalgam.

A period of intense suffering followed; the patient became prostrated with hectic fever, and was at times delirious. Pus oozed from the sockets of the teeth, which all became loose, so that several were lifted out without the use of forceps being necessary, and mingled pus and saliva were constantly pouring from the mouth. As the patient was rapidly sinking, it was deemed out of the question to wait for the separation of the dead tissues by the efforts of nature, and the whole jaw was removed, the periosteum being carefully preserved.

A new jaw was formed, appearing first as a cartilaginous deposit, and gradually acquiring firmness, till at the expiration of six months a strong jaw, free in its motions, and differing from the old jaw only in being smaller, was formed. Artificial teeth were inserted, and a most satisfactory result was attained.

I have brought this case under your notice, not only because it bears very closely on dental practice, but because Dr. Minor, the surgeon who took charge of the case, and several American dentists, have formed, as it seems to me, a very groundless and a very false conclusion as to its cause.

They confidently quote it as a case of *mercurial sali-*

(*a*) January 1, 1873.

vation, induced by the amalgam filling, and using it as a text, launch out into discourses upon the use of amalgam under any circumstances whatever being unjustifiable.

Now, this is a matter of such practial importance that it behoves us to examine into the case more minutely, the more so, as in another part of the same paper we find the following: "The point to which the attention of the association was directed was the occurrence of salivation, produced by the insertion of an amalgam filling into a tooth when the surrounding parts were inflamed and vascular;" another speaker, Dr. W. N. Guernsey, stating that he knew of three reported cases of salivation produced by amalgam filling.

Now, what is the evidence in this case that the amalgam had anything to do with the necrosis? Very little, indeed. In reading the history of the case it is pretty clear that she was, so to speak, "in for" necrosis before the filling was inserted. Still, alveolar abscess following upon its insertion may have made matters worse. But of mercurial salivation there is no evidence whatever beyond the one single fact that the flow of saliva was profuse. No dentist can have avoided noting that there always is an increased flow of saliva when there is violent inflammation about the mouth; in cases of difficult eruption of the wisdom teeth it is often a great source of annoyance to the patient, and I have myself put upon record ("Dental Surgery," 2nd ed., p. 571) a case of profuse salivation associated with neuralgia, and dependent purely on irritation of an exposed pulp.

The indications in this case are hopelessly inadequate to prove the existence of mercurial salivation; it was a case of necrosis, wholly induced by a careless application of arsenic, and aggravated by injudicious filling of the tooth.

The next question is—Is mercurial salivation, from the presence of amalgam fillings, possible? I have never seen such a case, nor, after careful search, can I find one reported which does not, on internal evidence, bear traces of the reporter's opinion being a very hasty and ill-considered one. As far as experiment out of the mouth goes it is a most improbable occurrence, for most of the better amalgams do not lose mercury when kept for weeks at the temperature of the mouth, and the quantity of mercury which a filling could possibly part with would be extremely minute; but then it must not be forgotten that our reported case is copied from a homœopathic journal, which may perhaps account for the preposterous inferences drawn about it.

This is not a fitting time to enter at any length into the question of the possibility or impossibility of mercurial poisoning from a filling. I will only say this much, that I do not believe it possible, and that merely from internal evidence, quite apart from other considerations, I attach no importance whatever to the supposed cases which I have read in the journals.

There is a point of interest in Dr. Minor's case of which I have already made mention, that is, the very perfect formation of a new bony jaw, perfect to all practical purposes, save that it was rather small.

The formation of this new jaw took about six months, at the end of which time it is described as "dense and solid, completely under muscular control, perfect in its shape, free and natural in its motions, and differing from the old jaw in containing no teeth and being somewhat smaller in its dimensions."

But there are cases on record of even more extraordinary regeneration of the jaw. In the museum of Bellevue Hospital, New York, I saw the cranium and lower jaw of a girl who had suffered from necrosis of both upper and lower jaws; the original necrosed lower jaw lay beside the skull, and was quite entire.

The peculiar feature of the case was, as I was informed, that the lower jaw then attached to the skull was not the one originally reproduced; the first new jaw had itself necrosed, and been removed, so that the one preserved in connection with the whole skull was actually the *third* lower jaw formed by the individual.

I was unfortunate in not getting a complete account of this case, so that I do not know what—if any--was the presumed cause of the necrosis.

IMPRESSIONS FOR PARTIAL CASES.—Better than either plaster or wax alone for some cases I have found a combination of the two. Placing a spoonful of plaster in the roof of the mouth, scoring the surface, and then taking the balance of the impression in wax; the plaster and wax coming away together, and giving me a more perfect impression than I can procure with plaster or wax alone.—*Dental Cosmos.*

ON THE

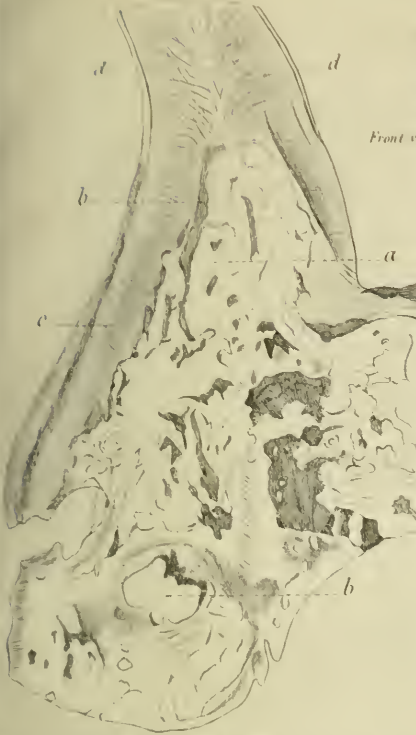
MICROSCOPICAL STRUCTURE OF FOSSIL TEETH FROM THE NORTHUMBERLAND TRUE COAL MEASURES.

BY W. J. BARKAS, M.R.C.S.E., L.R.C.P., LONDON.

(*Continued from* page 300.)

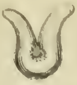
FISHES being the lowest class of animals in the sub-kingdom of Vertebrates in which teeth are present, naturally come first under our consideration. This branch of palæontology is at the present time in a very immature state, for active investigations into the faunæ of the Coal Measures only commenced a few years ago. As a consequence of this insufficiency of research, there is a certain amount of doubt as to what genera many of the teeth belong. Confusion is also not seldom caused by hasty conclusions being drawn from the examination of a single specimen. Thus, Professor Owen raised to the dignity of new genera two teeth under the names Pternodus productus and Ochlodus crassus, and described and figured them very accurately in a paper on the "Dental Characters of Fishes" (Plates V. and XI.), which he read before the Odontological Society a few years ago: now, these are not new at all, but simply different views of a tooth of Diplodus, a genus which was founded by the late Professor Agassiz some time previously. His errors do not end here, for in the whole of that paper there is hardly one tooth that he describes and makes the foundation of a new genus that had not been previously described, figured, and named; even this is not all, for he gives a description and drawing of what he considers to be a new tooth, viz., Dittodus divergens, but which is not a tooth, being a tubercle, probably of Ctenacanthus. From the above it will be seen how difficult it is to draw up out of this chaos any classification of the Coal Measure fishes; and when it is remembered that genera have been founded upon teeth alone and upon spines alone, the difficulty will appear none the less. Fortunately, however, the latest investigations tend to simplify all this to some extent, and they partially clear the way for the probability that some of the genera founded upon spines will be ultimately proved to belong to genera founded upon teeth; thus, the spines of Ctenacanthus belong in all likelihood to the fishes Hybodus or Cladodus, of which only the teeth are known in the Coal Measures. The late Professor Agassiz, in his "Poissons Fossiles," suggested that the Selachian spines might belong to the same genera as the teeth of Hybodonts and

Fig IV



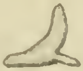
Vertical Section of side of Tooth shewing body of Tooth and portion of Denticle magnified 24 Diameters
a. Osteo Dentine b Medullary Canals. c Dentine with Calcigerous Tubes. d. Dentine somewhat resembling Enamel.

Fig I



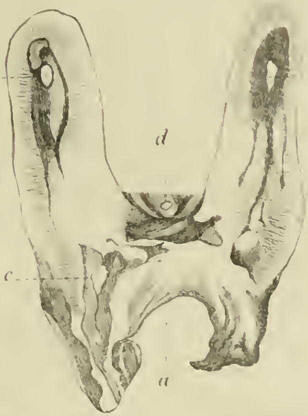
Front view of Tooth Nat. size.

Fig II



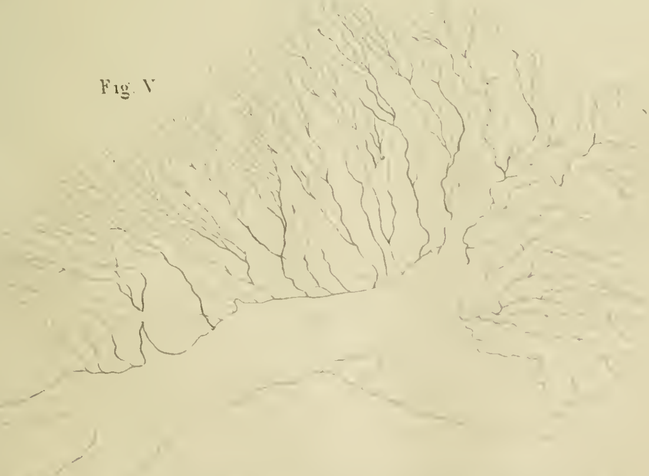
Side view of Denticle Nat. size

Fig. III



Vertical section of Fig I Magnified 24 Diameters
a. Remains of Medullary Canal b. Medullary Canal with radiating Calcigerous Tubes.
c. Medullary Canal only partially exposed by section. d. Portion of third Denticle.

Fig. V



Extremity of the Medullary Canal shewn in Fig I from which a Medullary Canal that proceeds to the Apex of the Tooth and Calcigerous Tubes spring directly. Magnified 100 Diameters

Cestracionts, and gave his suppositions as to which spines and teeth belong to the same fish, but for these suggestions he had not the slightest proof. In the face of all these obstacles I have attempted to draw up a classification embodying all the genera in our measures that are known up to the present time, but with regard to many of them it is difficult to say to what family they belong. Of the classifications published by Owen, Huxley, Dana, Copes, &c., I prefer that of Huxley; but as many of the teeth are not named in his works—or, as I think, classified wrongly—I have used my own judgment as to what family they should be arranged under; and if space permit I shall, in describing a tooth, state my reason for supposing it to belong to the family in which I have placed it. In every case, where there is room for much doubt as to the classification of a genus a note of interrogation has been placed after it.

- *Class.*—Pisces.
  - *Order.*—Elasmobranchii.
    - *Sub-order.*—Holocephali. No representative in our Measures.
    - *Sub-order.*—Plagiostomi.
      - *Family.*—Selachii.
        - *Sub-family.*—Squali. No representative.
        - *Sub-family.*—Hybodontes.
          - *Genera.*—Diplodus, Pleuracanthus (?), Cladodus, Hybodus, Ctenacanthus (?).
        - *Sub-family.*—Cestraciontidæ.
          - *Genera.* — Ctenoptychius, Pœcilodus, Pleurodus, Petalodus, Gyracanthus, Orthocanthus, Leptacanthus.
      - *Family.*—Raiæ.
        - *Genus.*—Climaxodus (?)
  - *Order.*—Ganoidei.
    - *Sub-order.*—Amiadæ. No representative.
    - *Sub-order.*—Lepidosteidæ.
      - *Genera.*— Palæoniscus, Pygopteris, Gyrolepis, Acrolepis, Cycloptychius.
    - *Sub-order.*—Crossopterygidæ.
      - *Family.*—Polypterini. No representative.
      - *Family.*—Saurodipterini.
        - *Genus.*—Megalichthys.
      - *Family.*—Glyptodipterini.
        - *Genera.* — Rhizodus, Rhizodopsis, Strepsodus, Archichthys (?), Orthognathus (?).
      - *Family.*—Ctenododipterini.

Genus.—Ctenodus (?)
Family.—Phaneropleuron. No representative,
Family.—Cœlacanthini.
Genus.—Cœlacanthus.
Family.—Chondrosteidœ. No representative.
Family.—Acanthodidœ.
Genus.—Acanthodopsis (?).
Family.—Pycnodontidœ.
Genera.—Platysomus, Amphicentrum (?),

The remains of Elasmobranchs consist of teeth, spines, tubercles, masses of cartilage, and a substance which has all the appearance of shagreen. These fishes having a purely cartilaginous endo-skeleton, are never found entire, as it is well known that cartilage could not have withstood decomposition for a long enough period to allow of its complete preservation, by becoming embedded during the slow deposition of the carboniferous strata. Some of the genera of this order are founded upon spines only—viz., Pleuracanthus, Ctenacanthus, Gyracanthus, Orthocanthus, Leptacanthus ; with these, therefore, we have nothing to do directly, but I shall probably refer to them in describing some of the teeth.

Ganoids have an osseous endo-skeleton, teeth, and scales ; therefore many portions of them are discovered, and the whole skeleton is sometimes found nearly perfect.

Selachian fossil teeth present many of the characteristics of the teeth of modern sharks, being mostly compound, conical, or pavement-like, not situated in sockets nor anchylosed to jaws, and having a somewhat similar microscopical structure.

Diplodus is a genus named by Agassiz, and founded upon teeth alone ; at least he, Professor Owen, and most other palæontologists consider them to be teeth ; but Mr. Atthey, and the late Mr. Hancock, in a conjoint paper which appeared in the "Transactions of the Northumberland and Durham Natural History Society," endeavoured to prove that they were tubercles ; and Mr. Thompson of Glasgow, has also promulgated the opinion that they are tubercles, and do not show the slightest trace of tooth structure. I think, however, that it is impossible to doubt their being teeth when good sections of Diplodus are examined under the microscope and compared with similar sections of undoubted tubercles, such as those of Ctenacanthus or Gyracanthus, for their shape most nearly resembles that of these teeth. Professor Owen, in Plates II. and III.

of his "Dental Characters of Fishes," has unintentionally given two excellent drawings of different sections of Gyracanthus tubercles. I say, unintentionally; for he did not consider them as tubercles, but as teeth, each belonging to a different genus. He named them Dittodus divergens, and Mitrodus quadricorius. The teeth of Diplodus vary in size from one-eighth to three-quarters of an inch in length, and consist generally of a deep rounded base, having a distinct round tubercle on its anterior surface; from its superior border spring two large and one small denticle,(*a*) the small denticle being situated between and behind the two large ones, this is exactly the reverse of what is found in the sharks of the present day; in some few cases, there are more then three denticles, but this form is very rare, I have only one in my possession. The denticles are variable in form, some being thick, short cones, divergent and much curved; others are elongated, comparatively thin, almost parallel with each other, and slightly recurved; in both these varieties the denticles are acutely pointed and the curve is from before backwards. Figs I. and II. show very clearly the shape of a typical tooth, the first being a front view, and the other a side view, and therefore necessarily only showing one denticle with that peculiar prolongation of the base which caused Professor Owen to believe it to be a new tooth, and which he named Pternodus productus. These teeth have been twice discovered by Mr. Atthey on a slab of shale, in company with a tissue closely resembling shagreen; and Agassiz also mentions the finding of similar slabs. They have also been found by other local palæontologists, embedded in masses of tissue which were thought to be either cartilage or coprolite; but on examining a specimen under the microscope, I found it to be to a great extent disintegrated cartilage. I am glad to find that I am corroborated in this fact by Professor Williamson, who states in his "Investigations into the Structure and Development of the Scales and Bones of Fishes," published some years ago, that he had found the teeth embedded in a tissue which he proved to be cartilage. These discoveries lead to the inference that the fish to which these teeth belong had a cartilaginous endo-skeleton and an external covering of shagreen, and that therefore it belonged to the

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(*a*) In Fig. I. the small centre denticle has not been inserted, from an oversight. The point of it should be seen projecting just above the junction of the two lateral denticles. Fig. III., however, shows a portion of it, the remainder having been ground away in making the section.

Plagiostomi. The shape of the teeth helps us to classify it still further, for it shews us that it is a genus of the sub-family Hybodontes. So far, all seems very natural; but if we are to draw deductions from finding these teeth occasionally buried in cartilage, or associated with shagreen, then the above conclusion may not be the right one, for the spines of Pleuracanthus are sometimes found in juxtaposition to them. Now these spines differ from all other fossil spines, and from spines of all existing fishes, with the exception of some of the Rays; therefore, reasoning from analogy, the fish having this laterally denticulated spine, will in all probability be one of the Ray family, or closely allied to it; but then, no Rays have teeth similar to those of Diplodus, though they have a cartilaginous endo-skeleton. If therefore their occasional discovery together allows us to suppose that they pertain to the same fish, then that fish belongs neither to the Plagiostomi, nor to the Rays, but must be considered as an intermediate family between those two.

A section of the tooth shews that it is formed of vascular and unvascular dentine, but the former structure predominates, for the whole of the base of the tooth and the tissue within the pulp cavities of the denticles are composed of it. The medullary canals in the base of the tooth branch and anastomose very freely, so that it is impossible to define their course; but this occurs less and less frequently as they approach and when they have entered the osteo-dentine of the pulp cavity; here the canals are much smaller than at their commencement, and run more nearly parallel with the axis of the tooth. In Fig. IV. is exhibited a section in which the canals pass principally along the sides and through the centre of the pulp cavity to its apex, where they join together to form one canal, which proceeds up the remainder of the denticle; this single canal is more clearly shewn in Fig. III. (*a*), and it will be observed that the canal is irregular in shape, consequently causing the thickness of the dentine to vary; it measures 1-500th of an inch in diameter at its broadest part, which is just above the junction of the canals proceeding from the pulp cavity. This is a great deal larger than the other canals of the tooth, with the exception of those close to the base. The

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(*a*) Fig. III., I think, requires a little explanation with regard to the rounded shape of the denticles, for they are not round but acutely pointed and curved backwards. This section has been made from behind forwards, so that the points have been rubbed completely away, leaving the rounded edge of the body of the denticle; exactly the same thing would occur in making an *oblique* section of a cone below its apex.

minute structure of the osteo-dentine in the Sections III. IV., and V., is very peculiar, for no calcigerous tubes spring from any of the canals except those running up the sides of the pulp cavity, and then they only arise from the side next to the unvascular dentine, into which they proceed; in this respect it certainly differs from ordinary vascular dentine, and it differs also from true bone, for there are no lacunæ, canaliculi, &c.

The unvascular dentine is composed of calcigerous tubules which spring from the canals running up each side of the pulp cavity, and from the medullary canal of the denticle; the tubules in the body of the denticle proceed at right angles to the axis of the tooth, but they become more and more vertical as the apex is approached; at the apex they are parallel with the axis. In the beginning of their course they branch dichotomously for the most part, and the branches anastomose freely (Fig. V.); as they approach the periphery they become exceedingly fine, do not branch so freely, and run almost parallel with each other; when within the 1-400th of an inch from the margin they appear to stop abruptly, forming a distinct though faint line. Very few of the tubules pass beyond this line, so that the external portion of the dentine is apparently structureless, and except for the brown colour might be thought to be enamel. I do not doubt but that with a greater magnifying power than I possess (I have examined it under a power of 600 diameters) this "dentinal enamel" would be found to be composed of fine calcigerous tubules continued from those of the dentine. The tubules in the dentine proper vary much in their size, some being rather large, measuring 1-400th of an inch in diameter, but the average is 1-10,000th of an inch. The dentine of one denticle is continuous with that of its neighbour, and not separated by a distinct layer of cement or calcigerous cells, as is usually the case in the teeth of other allied species. I have never seen an external coat of pure enamel on these teeth, so that in all probability there is not one; but it may be that in all those I have examined the enamel was worn off during life.

(*To be continued*)

IT is stated that Professor Owen has just discovered in the London clay at Sheppey a new fossil bird with teeth somewhat resembling those in the Australian hooded lizard. He concludes it to have been web-footed and a fish-eater. No evidence of true teeth had previously been known in any bird.—*Brit. Med. Journ.*

ODONTOMES.

(TRAITE DES TUMEURS. PAR PAUL BROCA.)

ODONTOMES GENERALLY.

V. GENERAL STUDY OF ODONTOMES.

(*Continued from* p. 313.)

ACCORDING to the facts known to me, I have reason to believe that no diathesis, no particular state of the constitution, influences the development of odontomes. Most of the subjects enjoy irreproachable health; some are more or less inclined to be scrofulous, but this coincidence is not astonishing when one thinks of the frequency of scrofula. Both sexes are subject to odontomes. It appears to me that boys are more exposed to them than girls, but this is not yet fully verified.

Circumscribed coronary odontomes (warty teeth) can appear on all teeth, uni, or multi-cuspid; but the other varieties of odontomes have not been observed on incisors. I know a case of a diffuse coronary odontome developed on a canine tooth in a man, and a case of cementary odontome developed in the follicle of a canine tooth in a horse. All the other facts that I have been able to collect refer to molar teeth, and among these the superior molars appear to be more exposed to odontomes than the inferior. It appears, then, that the disposition to odontomes is in connection with the degree of complication in a tooth, and this has nothing surprising in it. The molar teeth of the herbivora are more complicated than those of man, and are much more inclined to this affection.

I do not know any case of a congenital odontome. It may occur, perhaps; but it is quite certain that the follicles in first dentition are much less subject than those in the second to the development of odontomes. This is explained naturally when we remember that there are twenty permanent molars, and only eight temporary; and besides which the temporary molars are only bicuspid. We must not forget, too, that the formation of the temporary molars is much more rapid than that of the permanent. The duration of time, therefore, which the latter lend themselves to the formation of odontomes is much more considerable. Odontomes occur much more frequently in the lower than in the upper jaw. They are situated more often on the right side than on the left. I will not seek to explain this peculiarity, but merely remark, that many other affections due to excess of development have the same predilection for the right side.

Pathological Anatomy.—I shall not speak here of the proper structure of each variety of odontomes. I shall only indicate the anatomical character common to most of these tumours.

Odontomes are contained at their first appearance in a dental follicle, which surrounds it in the manner of a cyst. Later, they may cut a passage through the gum by a kind of eruption, more or less like that of the natural teeth. They can besides provoke suppressive inflammation, followed by ulceration or the destruction of a part of their membranous cyst. But from their origin, and for a period sometimes very long, they are entirely encysted in the follicular sac.

The odontome almost always fills the membranous pocket which encloses it, and to which at the commencement it was only attached at its base. This, always rather large, corresponds to the deep side of the tumour; at this level the floor of the cyst, in general thickened and very vascular, is united to the odontome by adherences usually rather soft, consisting principally of vessels always very small, but sometimes very numerous. The rest of the surface of the odontome is simply in contact with the internal side of the cyst. A kind of viscous transparent fluid, like that which a slight degree of inflammation causes to exude on the surface of the pleura, is sometimes interposed in a very thin layer between the cyst and the tumour, which can thus be slightly attached to each other, but which separate on the slightest traction. Such are—at least during the first period—the ordinary relations of the odontome and the follicular wall; but these conditions may be modified later in different ways, as I shall show in the proper time and place.

The external side of the cyst exactly covers the internal surface of an osseous cavity, the walls of which form an integral part of the maxillary bone. This cavity is nothing else than the alveolus of the corresponding tooth. The osseous tissue eccentrically pushed against by the growing pressure of the tumour, increases, forms into a compact plate, and finishes by constituting a kind of shell, which becomes thinner as it is dilated. When the tumour becomes voluminous, the bony shell, becoming thinner and thinner, may be reduced to the thickness of a leaf of parchment, and yields under the pressure of the finger a sort of crepitation known by the name of *parchment sensation*. Later, certain parts of the osseous walls may be entirely absorbed, and the cyst is then found in direct communication with the mucous membrane of the mouth.

It is doubtless superfluous to add that the mechanical pressure exercised by the tumour on the parts which surround it is of a nature to compromise at the same time the solidity of the maxillary, and the implantation and development of the surrounding teeth. Those teeth erupted completely may be shaken and expelled in consequence of the atrophy of their alveoli; those which are still enclosed in the jaw can, on the contrary, be arrested in their eruption, sometimes, because they are simply misplaced, sometimes because the tumour has made an irruption in their alveolus after having completed the atrophy and absorption of the osseous partition which separates them. In this last case the osseous cavity where the odontome is contained conceals at the same time one or more teeth regularly formed, but whose development may be sometimes arrested or delayed. Can these teeth be fused with the odontome? I dare not deny it; the thing always appears to me probable in theory; but I must add, that I know of no example. The case where the existence of this fusion is supposed to exist should receive an entirely different interpretation.

If the presence of an odontome is capable of injuring the evolution of the teeth in the course of formation, it is capable with more reason of hindering the development of the dental germs, which in the natural order of things must be formed deeper in the adjacent part of the maxillary. It is thus that an odontome of the first dentition can cause an abortion of the germs of the permanent teeth in the whole region they occupy. It is thus that an odontome of the first or second molar may injure the germ of the wisdom tooth. In this respect odontomes are much more injurious to dentition than the serous cysts of the jaws, which have equally their seat in the dental follicles.

Odontomes, like most tumours, have a tendency to grow most in the direction where they meet with the least resistance. They generally project at the side of the dental arch. Those of the upper jaw always incline towards the cavity of the maxillary sinus. In the lower jaw, the tumour being always at its commencement situated above the level of the dental canal, leaves below it a considerable portion of the upper part of the horizontal branch of the bone, in such a manner that this branch preserves great solidity, although the alveolar part, reduced to a thin bony shell, only offers slight resistance. In consequence of this there is a possibility of removing most odontomes without interrupting the continuity of the inferior maxillary. But this rule is not without exception. Odontomes which date from early infancy sometimes determine thinness, atrophy, and resorption of the lower part of the horizontal branch as well as the upper part; so that the jaw, after the removal of the tumour, loses all its solidity. It is necessary, when such is the case, to resort to resection; but this disposition being exceptional, and not being recognised with certainty before the operation, the surgeon should always endeavour to extirpate the odontome only, reserving to himself to resect the bone immediately after, if this appears necessary.

Embryo-plastic odontomes have no tendency to dentification. They always preserve the same structure, and can at every period increase without any obstacle to their own organisation. Other odontomes are dentifiable, although various circumstances may hinder them from dentification. Those which become dentified have in their evolution three periods: First, a period of formation, during which the tumours are more or less soft, vascular over their whole extent, and have a tendency to increase. Second, a period of dentification, where their growth is either entirely arrested, or else at least notably retarded, and where the dental tissues, in increasing quantity, proceed to form in the midst of the morbid mass, or on its surface a new substance, which is developed at the expense of their first course. Third, the period when dentification is complete and when the tumour becomes entirely stationary in its structure and volume.

It would appear that having arrived at this definite state, and having entirely ceased to grow, the tumour ought at the same time to cease to injure the surrounding parts, and to provoke symptoms of reaction. It is not so, however; and it is precisely then that odontomes induce the most serious accidents. This is doubtless caused partly by the great hardness of the morbid mass, which, often irregular in its outline, exercises an irritating action on the walls of the cyst. But there is another more decisive cause: it is the spontaneous fall of the tumour, which, gradually losing its vascular connections, finishes by becoming loose in the cavity of the cyst, and by becoming like a foreign body.

This condition is analogous to that which leads in certain old people to the fall of perfectly healthy teeth whose nutritive connection has been obliterated in the course of dentification. Before becoming dentified, odontomes are vascular; they are no longer so after dentification; and it is then, that having no longer any connection with the organism, they have a tendency to provoke around them those inflammatory accidents, more or less intense, such as hardness, caries, partial necrosis of the maxillary, perforations of the bony cyst, open bony running abscesses, whether in or outside the mouth, &c.

These accidents, after all, are not inevitable. They may be entirely wanting, or reduced to simple perforation of the gum. In the latter case the odontome becomes apparent in the interior of the gum, like an erupted tooth, and may even serve for mastication equally well as normal teeth.

(*To be continued.*)

FLETCHER'S NEW LOW-TEMPERATURE BURNER AND FOOT-BLOWER.

We have previously had occasion to notice some of Mr. Fletcher's improved appliances for the production and application of heat from gas. The "new low-temperature burner," by the same inventor, seems likely to be not less widely appreciated. It gives a range of temperature varying, at the will of the operator, from a mere current of warm air to bright redness, and so perfectly under control that it may be advantageously used for drying, for prolonged digestion and evaporation, and a variety of other operations. It is considered likely to supersede to a great extent hot-air baths, water-ovens, sand, oil, water, steam, and solution baths—apparatus which are all, from well-known reasons, more or less objectionable. We learn, in proof of the regular and equable character of the heat, that a common glass bottle may be placed on the tripod above the wire gauze at the top of the apparatus, and heated to any temperature that may be desired without the risk of breakage. When very low temperatures are required below, or not much exceeding the boiling-point of water, the gas is lighted through the aperture in the side of the furnace, and burns below the wire gauze. If a red heat is wanted. the light is applied above the wire, where the gas burns with a clear blue flame. By means of a specially adapted "blast-tube," the temperature can be raised to a bright yellow heat, bordering upon full whiteness, being regulated by the respective quantities of air and gas supplied. The "foot-blower" is an improved bellows which may be used with any kind of table blowpipe or laboratory blast-furnace; it appears convenient for working, well arranged, and not likely to get out of order.—*Nature*, Dec. 26, 1873.

THE SURGERY OF THE MOUTH.

BY FRANCIS MASON, F.R.C.S.,
SENIOR ASSISTANT-SURGEON AND LECTURER ON ANATOMY
AT ST. THOMAS'S HOSPITAL.

(*Continued from* Vol. II., page 311.)

3rd.—Cysts connected with imperfectly developed or misplaced teeth, so-called dentigerous cysts, but which, to show their true nature, might be termed "*Endo-odontoid Cysts.*"

In considering these cysts it is right that we should clearly understand—

1st. Their exact physical characters.
2nd. Their origin.
3rd. Their diagnosis.
4th. Their treatment.

A dentigerous (endo-odontoid) cyst is essentially a cyst containing fluid, in which is found a part or the whole of one or more teeth in a complete or incomplete state of development. It is generally associated with the permanent teeth, very seldom with the temporary teeth, but occasionally with a supernumerary tooth or teeth. It may originate from impaction of a tooth in any irregular position, in such a way as to prevent its proper eruption. The tooth may be completely inverted, or lie at right angles to the other teeth.

The *pathology* of these cysts is well explained by Mr. Tomes. (*a*) He says, "Fluid collects between the enamel and tooth capsule. As the cyst enlarges the contiguous bone is removed to make room for it, fresh bone being concurrently deposited on the outside of the jaw. In the case of such a cyst lying in front of a tooth which is being cut, it is obliterated by the advancing tooth, or it bursts; but when deeply situate in the jaw, a *cystic tumour* may be the result." This description seems at the present time the most scientific solution of the origin of these cysts, but it is reasonable to suppose that in the jaw, as in other bones, a new growth of a cystic character may be developed, starting from irritation or some unknown cause, and occurring quite independently of the enamel or tooth capsules.

The teeth generally implicated are the molars or canines,

(*a*) "Dental Surgery," 1873, p. 626.

although any others may be involved. The upper jaw is said to be more commonly affected than the lower, and there are several examples recorded of dentigerous (endo-odontoid) cysts invading the antrum. (*a*)

The *diagnosis* of the cases under consideration is by no means easy, but one point deserves special attention. It is the absence of one or more teeth in the neighbourhood of the swelling; but this evidence is not decidedly conclusive, for it is well known that a tooth may be impacted, and yet give rise to no irritation or inconvenience. The tumour is generally noticed on the outer side of the jaw, is of variable size, and, like the alveolar and odontoid varieties, is often mistaken by the patient for a gum-boil, but it is comparatively painless. Fluctuation is, however, not evident, as it is in abscesses in this region. (*b*) There is a hard, elastic, unyielding sensation imparted to the fingers. An exploratory puncture alone guides us in our diagnosis, but even an incision does not in all cases decide the question whether the cyst be simply "odontoid" or "endo-odontoid." The fluid is of variable density, and consists usually of turbid serum, but it may be blood-like, or resemble the fluid observed in ranula, (*c*) a clear, transparent, viscid material. Occasionally it contains cholesterine, and in cases of extreme inflammation, suppuration may occur. As time wears on the walls of the cyst undergo certain changes; thus, the alveolar wall may be completely absorbed, leaving nothing but a very much thickened wall of the periosteum gum and soft parts, or the bone may become calcified, being easily broken down under pressure of the finger.

It is essentially in the *treatment* that we are enabled to form our diagnosis. In dealing with dentigerous (endo-odontoid) a free incision should be made, and, if necessary, a portion of the outer wall removed with the bone-cutting forceps. The opening should be of sufficient size to allow the complete escape of the contents. Search should then be made for the *quasi* tooth or teeth, which may generally be found at the base of the cyst. Having removed such foreign bodies, if present, it will be well to stuff the sac with lint to promote granulation. The discharge is at times horribly offensive, and necessitates the use of lotions,

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(*a*) The Museum of St. Thomas's Hospital contains excellent specimens of cysts in and about the jaws.

(*b*) "Monthly Review of Dental Surgery," Vol. I., p. 409.

(*c*) "Monthly Review of Dental Surgery," Vol. I., p. 267.

composed of permanganate of potash or of carbolic acid, as already described. (*a*) Other applications, to suit the case, may be subsequently employed. In severer cases, in which the cyst involves much of the jaw, it may be thought expedient to have recourse to a more formidable operation. The upper lip will have to be divided in the median line, and if after separating it from the bony structure more room be required, the incision may be carried along the side of the nose, and even under the eyelid—indeed, a somewhat similar proceeding to that employed in removing solid tumours from this region, for which these cysts have not unfrequently been mistaken. (*b*) The operation will be more fully described hereafter, but the chief point to remember, in dealing with the upper jaw, is to leave, if possible, the bony palate, and in operating on the lower jaw not to divide the body, its continuity being as necessary to mastication as the palate is to proper articulation.

A CAPPING FOR EXPOSED NERVES.

As destroying nerves has become one of the things of the past, it becomes necessary frequently to intervene a non-conducting material between the exposed nerve and the metal filling. When the cavity is ready for the filling, cut a piece of isinglass plaster so as nicely to fit the bottom or wall of exposure of the cavity; wet it by immersing in water, then place it upon the palm of the hand. In a few minutes the moisture and the warmth of the hand will make it perfectly soft and pliable. Then with the foil carriers place it in position, and with a pellet of cotton merely moistened (not wet or saturated) with water, gently press it so as to make it conform to the cavity. On withdrawing the cotton the plaster does not come away with it as it would if dry cotton were used. With the syringe throw a current of dry air into the cavity until the plaster is perfectly dry. Now you can apply the oxychloride of zinc in any of its various forms, and fill without the fear of the capping coming away while introducing the filling. In this way the pain ordinarily caused by the application of the oxychloride to an exposed nerve is almost entirely avoided. I have frequently used it in this way, without causing the least pain to *the patient whatever.—Dental Cosmos.*

(*a*) "Monthly Review of Dental Surgery," Vol. II., p. 311.

(*b*) See "Lectures on the Progress of Anatomy and Surgery," by Sir William Fergusson, Bart.

RULES FOR THE EXAMINATION OF DENTISTS IN GERMANY.

First. Only such candidates can be approved who have successfully passed the following dental examination in every particular. Exception only to be made in cases mentioned in sixth paragraph.

Second. The dental examination is to be held before the doctors commissioned for the purpose, with whom a practical dentist is to be associated.

Third. Conditions for the admission of candidates are:

1stly. Having passed the Prima of a North German College or a North German Grammar School of the first order, of which a certificate has to be produced.

2ndly. A two years' residence at a University.

3rdly. A practical demonstration of technical dental work.

Fourth. Examination is divided into four parts. In the first part the candidate has to diagnose a case of disease put before him in reference to a disease of the teeth, gums, or palate, &c., and without assistance to give a written account of the nature, etiology, and treatment of the case. Secondly, the candidate has to answer under special inspection of a member of the examining commission ten questions at least, out of forty which have to be chosen, on anatomy, physiology, general pathology, therapeutics, materia medica, including toxicology, and special surgical and dental pathology and therapeutics. Thirdly, the candidate has to demonstrate his practical knowledge in making artificial dentures, singly and in complete sets, and also to show the technical knowledge of his profession, and the application of the various dental instruments on a subject or skull. Fourthly, the candidate is to be examined by word of mouth by at least three examiners as to the anatomy, physiology, pathology, and diathesis of the teeth, as to the diseases of the same, as to the gums, as to the preparation and effects of remedies, and as to the indications for the employment of the different operations.

Fifth. The same rules apply as given in the examinations for physicians respecting the application for examination, admission to the various parts of examinations, or for the repetition of the same, protocols of examination, certificates, and the publication of the names of those who have passed.

Sixth. Doctors having taken their degree who wish to pass as dentists are not required to go through the requirements of third paragraph, and have only to go through the curriculum of the first, third, and fourth parts of the examination.

Seventh. The fees are 15s. for each division of the examination.

TAXED FEES FOR DENTISTS IN GERMANY.

The following scale of fees are only used in those cases where disputes arise as to the amount of payment to be made, and a patient has the right of appeal in reference to them when there is no previous agreement as to charge, and the dentist is practising without a qualification. Qualified dentists hold themselves accountable to the same laws of professional etiquette and usage as prevail in this country.

1.	Extraction of a tooth in a dentist's house	1s. or 2s.
2.	When the extraction of a tooth or any other operation takes place in the patient's house, the dentist receives above the usual fee	1s.
3.	For the extraction of a stump or fang	1s. or 2s.
4.	When several stumps are drawn at the same time, for each	9d. or 1s.
5.	Cauterising a tooth	1s. to 2s. 6d.
6.	Stopping a tooth	1s. to 2s.
	Note.—Stopping with lead is forbidden.	
7.	When several teeth are cauterised or stopped at the same time, the dentist receives full fee for the first tooth but only half for each tooth following	
8.	Boring a tooth as far as the nerve	1s. to 2s.
9.	Boring through a fang in order to fasten an artificial tooth	1s. to 2s.
10.	Cleansing all the teeth	3s. to 9s.
11.	Filing the stump of a sharp tooth	1s. to 2s.
	When several are filed at the same time, after the first, half to be paid for the remainder.	
12.	Filing off a carious tooth	1s. to 2s.
	When several are filed at the same time, after the first, half to be paid for the remainder.	

13. Filing apart, carious teeth	2s. to 3s.
14. Scarification of the gum	2s. to 3s.
15. For easy operations of the gums	1s. 6d. to 3s.
16. For the first visit in toothache	1s. to 2s.
17. For each following visit	9d. to 1s.
18. For each first examination and advice to a patient in a dentist's house	6d. to 1s.
19. For each following examination and advice	3d. to 6d.
20. For the straightening of a crooked tooth in a child	1s. to 2s.
21. For the straightening of a second or third crooked tooth, only the lowest fee to be charged.	
22. For the preparation and insertion of an artificial tooth	6s. to 9s.
23. When several teeth are prepared and inserted at the same time, only the lowest fee to be charged.	
24. For an entire set of twenty-eight teeth, with springs, including the necessary gold; the first time the highest fee for each tooth to be charged, but the second and third times the lowest.	
25. For refastening an artificial tooth, happen as it may	1s. to 2s.
26. Fastening a loose tooth, happen as it may	1s. to 2s.
27. Should gold be used in stopping or fastening a tooth, or for straightening a crooked tooth, it must be especially paid for.	
28. The visit during which the operation takes place is not to be paid for any more than to a surgeon.	

FURTHER DECLARATION.

(M. Verp., v. 22, Sept., 1821.)

1. As in Nos. 22 and 23 of Taxed Dental Fees, of the 21st June, 1815, it is ordered that 6s. to 9s. is to be paid for the insertion of an artificial tooth, and when several teeth are inserted at the same time only the lower fee of 6s. is to be charged, it must be understood that human teeth as well as walrus teeth are meant.

2. When an entire set of twenty-eight teeth is not in-

serted, but only several, they are not to be paid for according to No. 24, which refers to an entire set, but according to No. 23.

3. As it is only mentioned in No. 24 that under the remuneration settled the necessary gold is understood to be included, so according to Nos. 22 and 23 the same can be especially paid for,

4. When, according to No. 2, an operation takes place in the house of the patient, in addition to the usual fee 1s. has likewise to be paid, and No. 28 fixes that a dentist's visit in connection with an operation is not to be paid for, the contradiction between these two statements is only apparent—No. 2 speaks only of single visits and operations, but 28 refers to toothache, for whose treatment the dentist must make visits extending over a certain period, when the operations occurring at these periods shall only be liquidated by the fee fixed for the operation.

5. When the dentist is obliged to undertake to make an examination and give advice to a patient in his own house, he charges according to Nos. 16 and 17, but if the examination has taken place in the dentist's house he charges for the same according to Nos. 16 and 17, and for the visits which he afterwards pays to the patient according to No. 17.

6. The insertion of artificial teeth is to be paid for according to the highest charge in 24 when the patient has not previously worn an artificial denture, otherwise only the lowest fee can be charged, and it is indifferent whether the same dentist makes the second denture who has made the first, or another dentist; for the preparation of a patient's mouth who has never worn an artificial denture, requires, as a rule, considerable time and trouble, the mouth, however, having been once prepared, the dentist has simply to renew it.

7. When the patient requires natural human teeth and the same cannot be procured for the legal tax, the dentist is free first of all to come to terms with him by a written contract.

I have had experience with "celluloid." I prepared for a full plate of the amber-colored material, and when about to "screw down"—my thermometer being as I thought all right, and registering 300 deg. F.—was surprised to see a dense smoke issuing from the flask. Upon removing the flask from the oil, I found that the celluloid had "gone up."—G. A. M., *in Dental Cosmos.*

THE METROPOLITAN HOSPITALS.

ST. GEORGE'S HOSPITAL—DENTAL DEPARTMENT.

In the first volume of the "St. George's Hospital Reports," published by J. and A. Churchill, there is an interesting paper by the late Dr. Page on the origin and purposes of the institution. It commenced in what was Lanesborough House, on the site of the present hospital, in the year 1733-4.

At first it was only furnished with thirty beds. In 1735 it was resolved to enlarge the house, and, if possible, to procure some additions to the premises.

In 1825, from the great increase of the population, the applications for in-door relief far exceeded the accommodation which the hospital could supply; the condition of the wards and the other arrangements of the building were found to be faulty, and unfit for the requirements of an improved state of medical and sanitary science. After careful consideration it was thought best to rebuild the hospital entirely. In 1834 this new erection was finished, with accommodation for 325 in-patients, a theatre for lectures, and a museum for the pathological preparations.

In this year, also, an Act of Incorporation was obtained, which empowered the trustees to hold property to the amount of £20,000 per annum, without incurring the penalties or forfeitures of the Statute of Mortmain.

In 1851 the south wing of the building was extended at its western end, with room for twenty-five additional beds. In 1859 the north and south wings were raised a story, affording room for two cheerful convalescent wards and spacious sleeping rooms for the nurses. In 1869, through the munificence of Miss Williams and others, additional wards were added to the south wing, and a new and commodious out-patient department built. These, with a better system of ventilation and more convenient baths, rendered the hospital as efficient in its means and appliances for the relief of the sick as can well be in premises of limited space.

The first object of a hospital, undoubtedly, is the relief of the sick, but it cannot be said to fulfil its due measure of usefulness unless it contributes to the education of medical practitioners and the advance of medicine and surgery.

From the first establishment of St. George's, the physicians and surgeons were permitted by the laws of the hospital to have a limited number of pupils, who attended them in their visits to the wards. The surgeons' pupils "dressed" the patients, and both physicians' and surgeons' pupils were present at operations and examinations. It was not, however, until nearly one hundred years after the institution of the hospital that a complete school of medicine and surgery was established within its walls. The school is now liberally assisted and encouraged by the Governors, and under the control of the Medical School Council has been gradually developed. It may now fairly challenge comparison, in almost every respect, with those of the older and richly endowed hospitals of the metropolis.

The gradual extension of the hospital necessitated the organisation of special departments, such as the Maternity, and the appointment of special surgeons, such as Ophthalmic, Orthopædic, Aural, and Dental. In the last department we are more especially interested.

The first appointment of a dentist was in the year 1857. He is appointed by a Committee of the Governors. His duties may be classed under three heads—viz., attending to all cases of in-patients requiring his assistance; superintending the dental branch of the out-patient department; and instructing those pupils who are desirous of acquiring a knowledge of dental surgery.

The dental patients are attended to twice each day—viz., from 9 to 10 a.m., and 1 to 2 p.m. The dentist personally attends on the Tuesday and Saturday mornings, and on the Thursday at 1 o'clock, that being the day and hour for general surgical operations.

The pupils are instructed theoretically by a course of lectures delivered in the summer session. The course is a short one, adapted for medical men, and suited for such as are likely to join the Army or Navy. The lectures embrace the histology and development of the teeth, and the general principles of dental surgery, each lecture being fully illustrated by diagrams, microscopical and other preparations, and models of illustrative cases.

The pupils, after being examined and found competent by the dentist, act as dressers, and, under his instructions, operate. A record is kept of each case, and the initials of the dresser attached to those attended by him. Nearly two thousand dental patients are seen annually, so that a fair amount of practical work falls to the share of each dresser. The whole arrangements are carried out with the view of affording sound, practical teaching for the pupils, and the alleviation of suffering for the poor. A large majority of the patients are of that class who, from various reasons, habitually neglect their teeth, and only apply for relief when suffering and incapacitated from following their ordinary daily occupations. The relief they seek must therefore be both immediate and permanent.

From a summary of 8,708 recorded cases of the extraction of permanent teeth, it was found, that during the summer months, there must be an increased tendency to those conditions which render diseased teeth painful, necessitating their extraction, or rendering the operation desirable. During the four months, May, June, July, and August collectively, 3,108 were extracted, whereas 2,839 and 2,761 are the numbers for the two remaining divisions of the year.

The case-book used is well arranged, and greatly simplifies the ultimate classification of the recorded cases—a far from slight consideration, as will be well understood by those who have experienced the laborious duty of collating thousands of cases. A specimen of line is given, and each page is arranged for ten cases. A P. or T. is inserted in the proper space when the tooth operated on is permanent or temporary.

Date.	Sex.	Age.	Jaw.	Side.	Cause of Removal.	Central.	Lateral.	Cuspi.	1st Bicus.	2nd Bicus.	1st Mol.	2nd Mol.	3rd Mol.

The Dental Surgeon and Lecturer on Dental Surgery is Mr. Charles Vasey.

APPOINTMENT.

Mr. William J. Newman, of 75 Mount Pleasant, has been appointed Consulting Surgeon-Dentist to the Liverpool Infirmary for Children, on the completion of eighteen years' service as Surgeon-Dentist.

SOME OBSERVATIONS
ON THE USE OF PHOSPHORUS IN NEURALGIA.

(Illustrated with Eighteen Cases.)

By J. Ashburton Thompson, Fellow of the Royal Obstetrical Society, Surgeon-Accoucheur to the Royal Maternity Charity, &c.

(The Practitioner.)

[*Continued from p.* 317.]

Case 14 was also complicated with phthisis in an early stage. She too began by taking F. No. 1, but was obliged to relinquish it. She took F. No. 2 (one-twelfth of a grain) for other seven days, and was relieved, but not cured. She, too, now removed into the country. It is worthy of remark that neither of these cases experienced the least improvement in general health, and no alleviation of the phthisical symptoms. I believe that it was Dr. Churchill, of Paris, who so strongly advocated phosphorus in consumption.

Case 18 had a very large number of decayed teeth, and it is a question whether she was not suffering from simple toothache; a kind of pain which those patients who suffer both from it and from neuralgia describe in very different—in distinct—terms. She had suffered four months when she came under treatment, and was already reduced to a condition of very dangerous debility. She took both formulæ without the least benefit.

Against these three cases we may put Nos. 15, 16, and 17. No. 17 is a remarkable example of the power of the remedy over a favourable subject. This lady had suffered from cranial neuralgia for sixteen years, and during the whole of that period could not recall one entire week of freedom from pain. Her father had suffered continuously for many years. Her catamenial periods, her marriage, her pregnancies, made no difference to her in this respect. She took F. No. 2 (one-twelfth of a grain) every four hours, and subsequently every three hours. After six doses she became entirely free from pain, and continued so for eight days. She then experienced a slight return of it, and she increased her dose—without advice, of course—to one-fourth of a grain, which she took for three days without harm. She soon entirely recovered.

There is one other remark to be made concerning this group of six cases—the concurrence of right and left trigeminal pain in four of them. I was unable to obtain satisfactory information as to the side first attacked.

In the other two classes of primary acute and recurrent acute cases there is a curious equality in the numbers cured in a remarkably short time as against those in which the process occupied a longer period. In each class are three cases in which the average duration of treatment was respectively twenty-eight and thirty-two hours. In these cases the period of illness does not seem to bear any proportion to the period of recovery. For example, Cases 3, 5, 9, and 12 were ill respectively 21, 14, 21, and 7 days; yet they recovered in 24, 48, 24, and 48 hours--a far shorter period in proportion than that in which the remaining cases recovered.

Case No. 7—one of sciatic pain occurring at that time of life known as the period of decay—was the first I treated with phosphorus. Six years previously she had recovered from an attack which had lasted her for two years with scarcely any intermission. She was a poor woman, of spare habit of body, sixty years of age, and enfeebled by privation and trouble. She took F. No. 1 (one-twelfth of a grain), every four hours, for six doses. Most severe vomiting and purging now made their appearance, and in visiting her I was seriously apprehensive that death would shortly ensue. She had lost all pain—all neuralgic pain—however; and she ultimately recovered. She had no relapse. I could not quite make out whether the pain disappeared before or after the purging; and of course the question arises whether this was not a case of sciatic pain from fœcal accumulation, which croton oil would have relieved with equal promptitude. I do not think so, however; and, further, I doubt whether the serious symptoms were owing to the remedies used. They may have been critical; and, in any case, this is a doubtful example of the use of phosphorus.

I remarked above, that the time occupied by treatment shows the extreme space occupied in the *cure;* but most of these cases experienced very remarkable relief in a few doses. This the following table will make plain:—

Case No.	1	obtained great relief in	.	7 doses.
"	2	" "	.	3 "
"	4	" "	.	2 "
"	6	" "	.	8 "
"	9	" "	.	5 "
"	13	" "	.	10 "
"	14	" "	.	2 "
"	17	" "	.	4 "

I close the present series of cases with these few remarks, which will enable the reader to draw his own conclusions as to the value of this plan of treatment. Nothing has here been said of hygienic measures; but these which, both as remedial and as prophylactic, are indispensable to a successful treatment, have been already set forth in the most complete way by various authors upon this subject, and do not therefore need repetition in these observations upon the use of a somewhat neglected but very useful remedy.

THE LAWS OF TRANSMISSION OF RESEMBLANCE FROM PARENTS TO THEIR CHILDREN.

BY JOHN STOCKTON HOUGH, M.D., OF PHILADELPHIA.

(*Continued from page* 328.)

THE writer knows of a case where a father died of Bright's disease at fifty-six, his son at thirty-five, and another son is threatened with it at the thirty-fifth year. Two daughters and three other brothers have not been affected. There is still another case in my mind of a son who inherits the same disease apparently from his father.

When visiting the rooms of the Historical Society of Pennsylvania, my attention was fixed at the first glance on a portrait of one of our revolutionary generals of superior family, that bore such a striking and unmistakable likeness to a young acquaintance of mine that I was anxious to know the relationship, and have recently learned that it was his great-grandfather, and doubly so, for his father and mother were first cousins both of the same name, equally related to the gentleman represented in this portrait.

The strikingly characteristic feature in this family is the marked fulness of the lower eyelid and arched eyebrows, which were intensified in this young man, because of the double descent through his father and mother. All the males and some of the females in this family die of apoplexy. I have not learned whether the characteristic features in this family are transmitted directly from male to male, or by atavic descent through the females; it certainly continues in the male line.

Dr. Tripe expresses his "belief that male infants are predisposed to disease in a far greater ratio than females, especially during intra-uterine life; that this predisposition, which in extra-uterine life is more marked during the first month, gradually diminishes after the child ceases to obtain its nutrition direct from its mother, and is almost removed shortly after the ordinary age of weaning, viz., at one year and a quarter. From these considerations we infer that the greater mortuary rate of males during the first years of life depends on some influence derived from one or the other or both of its parents, but most probably chiefly, if not entirely, from the mother. . . . The greater longevity of females certainly points to another vital difference in the sexes; and it may perhaps be true that one cause (greater vitality of the female sex) induces the large differential mortality which we have shown to exist" (*a*).

This view is fully confirmed in the author's last paper on the "Relative Viability of the Sexes, particularly with regard to the relative liability to the inheritance of certain transmitted diseases—considered in relation to the selection of Life Insurance risks, with a view of exhibiting the unjustness of the practice of charging higher rates for women" (*b*); also in his paper on "Statistics of Marriages, Births, and Deaths in Philadelphia for the eleven years ending 1871."—*Penn. Monthly*, September, 1873.

"There are family diseases, just as there are family likenesses, manners, and peculiarities; and what is remarkable, they are more liable to be communicated by the mother than the father, as if it were her special prerogative to impress her vices as well as her virtues upon her descendants" (*c*). "Possibly diseases transmissible from either parent will be more likely to be developed in those children who partake most of the *vis insita*, as of the physiognomy of that parent; but we do not know that the observation of our readers will be found to confirm this statement of the author" (*d*).

Mr. Sedgwick observes that "in many cases where the disease is limited in its appearance to one sex, its transmission is restricted to the other. From a careful analysis of a large number of cases, I am at present disposed to think that sexual limitation in the transmission of diseases is more common in females than in males. In several of the cases I have mentioned, where the appearance of the disease has been strictly limited to the males, its transmission has been quite as strictly limited to the female sex, occasioning the phenomenon of *double atavism*, as where neither sons nor

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(*a*) British and Foreign Medico-Chir. Review. April, 1857, pp. 469—70. "On the Relative Mortality of Males and Females under five years of age."

(*b*) New York Medical Record, June 16 and July 16, 1873, pp. 297—302, and 353–5.

(*c*) Prof. Samuel D. Gross, M.D., LL.D., D.C.L., Oxon. A System of Surgery, &c. In two vols., Phila., 1859 and 1872.

(*d*) British and Foreign Medico-Chir. Review, vol. xxvii., 1861, p. 382. Review of the above.

daughters ever inherit their father's disease, but only the grandsons in the third and fifth generations, by transmission through the females of the second and fourth generations" (*a*). In a note he states that "in the report of a case of hereditary malformation of the hands, affecting ten generations of the same family, it is stated 'that it was the women only who had the misfortune of entailing this defect on their offspring'" (*b*).

"Altogether, the male parent exercises more influence upon the irritability, and the female more on the sensibility. Fabricius is not, therefore, far from the truth (*c*) when he says, that we inherit from our fathers the tastes and cachexies; from our mothers, the spasms, melancholy, vivacity, and intellectual faculties; or Gleischen (*d*), in assuring us that the male determines the bony frame, and the female the eyes. Following Linnæus, in hybrid vegetables, the sexual organs resemble more the mother, the corolla—and in general the exterior parts—the father. In like manner, following the observations of Senff, gardener of Kœnigsberg, the leaves are more like the father than the fruit. Girou says that the mother has more influence upon the plasticity, and the father upon the exterior vitality (*e*); this assertion does not rest on sufficient proofs. We have need of new facts before we can affirm that the mother determines more the viscera, as Vicq d'Azyr pretends having remarked, and that it is she principally who assures the longevity, as Sinclair (*f*) contends (*g*).

Cultivators and scientists have frequently called attention to the laws of resemblance which seem to prevail in the production of hybrid plants. Dr. Herbert (*h*), according to Sedgwick, "established it as a law with respect to amaryllaceous hybrids, 'that they resembled their mother in foliage and stem, or the organs of vegetation; and their father in flower, or organs of reproduction.'" Fries-Morel (*i*) states that in carnations, the hybrids resemble the mother in form and the father in colour. According to De Candolle (*j*), Gaërtner, Wiegman, and Knight have remarked that many vegetable

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(*a*) Op. cit., p. 210.
(*b*) Edin. Med. and Surg. Journ., vol. iv., p. 252, 1808.
(*c*) Resultate naturhistorischer Forschungen, p. 60.
(*d*) Ueber die Saamenthierchen, p. 43.
(*e*) De la Génération, p. 129.
(*f*) Principes d'Hygiène, Extraits du Code de Santé, Genève, 1823. (?)
(*g*) Burdach, Physiologie, vol. ii., p. 266.
(*h*) Journ. Horticult. Soc., vol. ii.
(*i*) Ann. de la Soc. d'Hortic. de Paris. p. 112, 1828.
(*j*) Physiologie Végétale, tome ii., 1862, p. 714.

hybrids have a tendency to return, after a time to the maternal, but never, as a rule, to the paternal type" (*a*). The views of Lindley seem to be opposed to those of Dr. Herbert, for he has it that vegetable hybrids resemble the male parent most in foliage and the female most in flower.

"Five or six hundred domestic animals," says Girou (*b*), comprising mammifers and birds, which are born annually under my eyes, and my relations with cultivators who have made the education of beasts the principal object of their life, have furnished me with frequent occasions to observe the resemblance of fathers and mothers with their products.

"The products of domestic animals resemble, in general, more the father than the mother by the head, the members, the colour, the character, in a word, by all that which belongs to the exterior life; nevertheless, under the same relations, the female, more than the male, resembles the father, and the male, more than the female, resembles the mother. The same products resemble in general also more to the mother than to the father by the height, the length of the hair, the dimensions of the pelvis, finally by all that which is under the influence of the exterior life, or of nutrition; but under these relations the male, more than the female, resembles the father, and the female, more than the male, resembles the mother.

"The fœtus often resembles, by the exterior life, the paternal grandfather; and under the same relation, the daughter sometimes resembles the maternal grandmother; even when the father resembles his proper mother, and the mother her proper father.

"I have never seen a resemblance to the paternal grandfather in the grandsons, nor to the maternal grandfather in the granddaughters, when the father does not resemble his proper mother, or the mother her proper father.

"At some period after the epoch of birth, the sons who resemble from the first their mother, and the daughters who resemble their father, acquire sometimes from the resemblance, the one with her father and the other with his mother; that metamorphosis is more frequent and more pronounced in the sons than in the daughters.

"The sons never pass from the resemblance of the father to

(*a*) Sedgwick, op. cit., July, 1863, p. 182. See also Sagaret, Considérations sur la Production des Hybrides, etc. Annales des Sci. Natur., tome viii., 1826.

(*b*) Observations sur les Ressemblances entre les Descendans et leur Ascendans. Annales des Sci. Naturelles, t. v., 1825, pp. 40—46.

that of the mother, nor the daughters from the resemblance with the mother to that of the father.

"Several naturalists have recognised the general influence of the father on the exterior life and the mother on the interior life. In speaking of mules, Vicq d'Azyr said: 'It seems that the exterior and the extremities are modified by the father, and that the entrails are the emanation of the mother.' The chasseurs have adopted the proverb, *Chien de chienne chienne de chien,* to express the fact that they find the qualities of the mothers in the sons, and those of the fathers in the daughters. A hunting bitch with a double nose, the issue of a father with a double nose and mother with the usual form of nose, was fecundated by a common dog, and of eight young of the same pregnancy, four were males with double noses, and four females with a common nose. Of four colts by an Arabian mare, three males had the hair of their mother, and one female that of the father. As far as the size or stature of the offspring is concerned, it seems to be pretty well ascertained by facts known to the breeders of cattle and horses, that this depends in a great measure on the mother "(*a*).

According to Mr. Thos. Andrew Knight, an intelligent gentleman, who gave much time to experiments in connection with the breeding of cattle, we are told that "in viviparous animals the size of the fœtus is affected by the influence of the male parent, and in some instances not inconsiderably; but the size and form of the eggs of birds do not appear to be in any degree changed or modified by the influence of the male; and therefore the size of the offspring at birth must be regulated wholly by the female parent "(*b*).

In multiparous animals it is often observed that the influence of one parent preponderates in a part of the progeny, and of the other in another part of it. Thus it happens when a pointer and a setter breed together, it is not unusual to find part of the whelps almost perfect pointers, and the remainder as nearly true setters (*c*). It being a fact, then, that brothers and sisters of the same pregnancy in multiparous animals do not resemble one another, it is not at all strange that products of uniparous animals, born at distant periods, should so frequently be dissimilar.

(*To be continued.*)

(*a*) Studies in Physiology and Medicine, by R. J. Graves. Lond., 1863, p. 137.

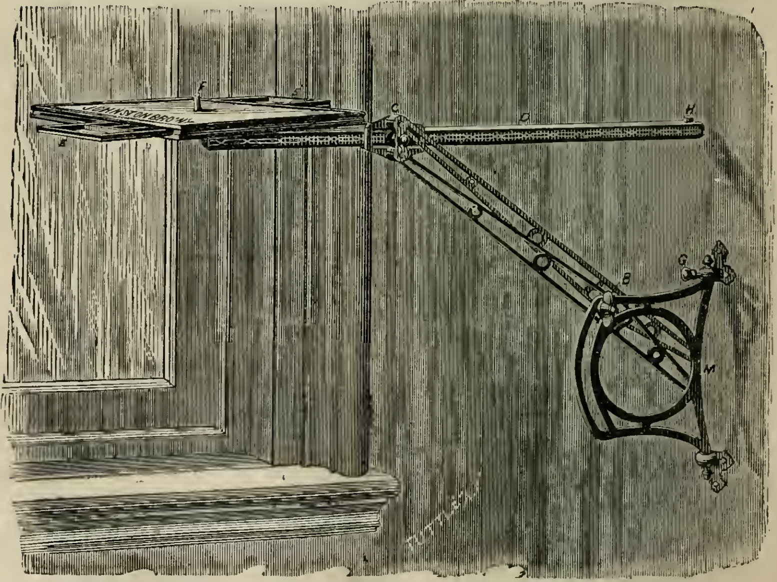
(*b*) Philosoph. Trans., 1809, p. 398.

(*c*) Quarterly Journal of Royal Agricultural Soc., vol. i.

NEW INVENTIONS.

MORRISON DENTAL BRACKET.

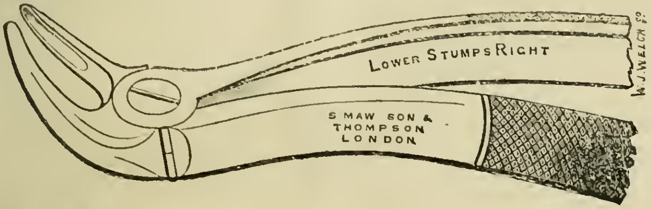
We have been invited by Mr. Rutterford, of Poland Street, to inspect one of these new extension brackets, the invention of Dr. Morrison, of the United States. The bracket is so constructed that it is capable of a semi-rotary movement, an upper and downward movement, without altering the security of the table attached to it; and, besides this, an extension of two feet without reducing its rigidity, on pressure. The extension arm is formed of a hollow bar of metal that gives great lightness, as well as strength; and in addition serves as a reservoir for spirits of wine to supply the wick of a lamp in the centre of the table. The table itself has drawers and a raised edge. the bracket is constructed for fixing to a wall.

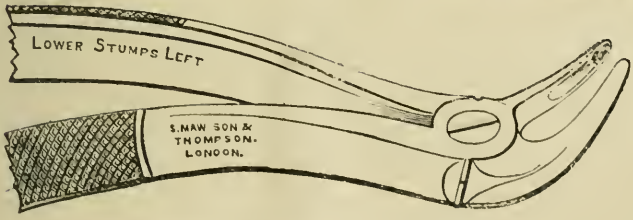


We have never seen a better specimen of workmanship than this bracket presents, and we are alike indebted to Dr. Morrison, the inventor, and Messrs. Johnston Brothers, for the way they have carried out its manufacture.

MAW'S NEW PATTERN FORCEPS.

We have received from Messrs. Maw, Son, and Thompson specimens of their new pattern forceps for lower stumps, shown in the accompanying woodcut. They are so arranged that the operator can see well what he is doing at the time of operating, a matter that occasionally causes same difficulty in operations on the lower jaw. These forceps answer well the purpose for which they are intended, are simple in pattern, and yet efficient in use. Writing of Maw's instruments, we were surprised to hear that during the last two years this firm alone had sold ten thousand pairs of forceps for the extraction of teeth. We can scarcely boast much of the advance of conservative dentistry in the face of such a wholesale demand for instruments to remove the teeth.





REPAIRING CELLULOID CASES.

To fasten loose or fallen teeth on celluloid plates, dissolve the base in nine parts sulphuric ether and one of alcohol, to about the consistency of thick cream. Drill retaining points in the plate where the teeth are to be attached; wet the part with a few drops sulphuric ether; immediately rub a portion of the dissolved base on the part, and on the tooth till it adheres; then work into the mass as much of coarse filings of celluloid base as you can while adjusting the tooth, and in a short time it will set firm enough to burnish up. If it stands two or three hours, it will be as hard as the rest of the plate. If too much of the filings have been used, two or three drops of sulphuric ether will smooth down and unite the parts, if applied while yet soft.—*Dental Cosmos.*

REPORTS OF SOCIETIES.

DENTAL STUDENTS' SOCIETY, 32 SOHO SQUARE.

ORDINARY MEETING HELD MONDAY, DECEMBER 8, 1873.

FREDERICK CANTON, Esq., Treasurer, in the Chair.

THE minutes of the previous meeting having been read and confirmed, Messrs. T. E. King and G. E. Hammond were elected members of the Society; also Mr. Alfred Fox proposed as a member.

Mr. FREDERICK CANTON showed a case of exostosis in the lower jaw of a cat.

Mr. HAMMOND exhibited a very interesting case of salivary calculus removed from a patient who had applied at the hospital for relief; it was situated immediately beneath the tongue, apparently projecting from the surface of the submaxillary duct.

Mr. DAVID HEPBURN mentioned a case in which a foreign body had entered the submaxillary duct, and causing a tumour of considerable dimension, was cut down upon for the purpose of removal, and at first supposed to be a part of the cornua of the hyoid bone, but afterwards found to be a calculus with nucleus composed of some small particles of wood.

Mr. OAKLEY-COLES wished to know if the calculus shown by Mr. Hammond had long occupied the position represented in the model; thought that from some sudden effort it must have been forced from the horizontal into the vertical position.

Mr. HAMMOND'S explanation endorsed this latter opinion of Mr. Coles; he said that the calculus had only occupied that position for six hours previous to seeing patient; before this, the patient had only been conscious of a small tumour beneath the tongue.

Mr. W. C. STORER BENNETT inquired what had been the experience with using Pack's gold.

Mr. WILLIS said that where the rubber-dam had been used, he found it had great adhesive properties, but experienced much difficulty in working it where there was the slightest moisture; it required great care in manipulating, and from softness was very readily pierced by instruments.

Mr. WOODHOUSE said that he had found the pellets useful in cases of decay along the line of gum in front teeth, and where the rubber-dam could not be applied by placing pellets against the gum at the commencement of a filling, and so avoiding any moisture getting into the cavity.

The following paper was then read by Mr. David Hepburn on "Alveolar Abscess:"—

Mr. President and Gentlemen,—When our worthy Secretary wrote and asked me to read a paper before the members of "The Dental Students' Society" on this evening, I immediately began to cast about for a subject, but through numerous engagements, having but little time at my disposal, I thought that you would excuse me if I ventured to lay before you one so simple as "Alveolar Abscess." It is one, however, which comes under our notice day by day, more especially at this season of the year, and consequently a mutual exchange of ideas relative thereto, will no doubt be of service to us all.

"Alveolar abscess" is a disease dependent for its origin essentially upon the teeth, and is a secondary consequence of inflammation of the dental periosteum, which may be induced by a number of causes, amongst which I may mention inflammation of the "dentinal pulp," blows received upon the teeth, the irritation produced by unerupted wisdom teeth, the plugging of teeth before ths perfect eradication of the nerve, the too hasty stopping up of teeth in which the pulp cavity has long remained open, and from which some *slight* discharge is exuding, after the operation of pivoting; and frequently it arises in teeth which appear in all respects healthy, probably produced by attacks of cold. In all cases, however, the course which the disease takes is much the same, although its consequences and treatment may in some respects differ. With your permission I will hastily run through the various stages of the disease, leaving what I have to say upon its treatment until later on.

For example, we have a tooth the pulp of which, being exposed, is attacked by some cause of irritation; this produces inflammation, which in turn spreads to the periosteum through the foramen at the apex of the fang, the periosteal vessels becoming enlarged, while at the same time the rapidity of the circulation greatly increases, and were the tooth extracted at this time, the membrane at the apex of the fang would be found red and thickened, this appearance being due to its hyperæmic condition, and to the small amount of exudation which may already have taken place. Soon the vessels having become over-distended, the rapidity of the circulation greatly diminishes, and lymph is exuded through the capillary walls; this collects around the extremity of the fang, whilst at the same time a small cavity is formed for its reception by absorption of the surrounding bone. The lymph then undergoes a remarkable change in its constitution, resulting in the formation of the "sac of the abscess," which so frequently comes away entire when the tooth is extracted at this stage. The small collection of lymph, consisting as it does of the fluid portion of the blood, and a number of the white corpuscles, is capable of undergoing organisation, and this in part takes place, the outer portion becoming converted into a sort of fibrous bag, while the cells in the interior rapidly increase in number, and become converted into pus. As this increases in quantity a further absorption of the alveolus takes place, which may result in the formation of a considerable cavity, and this proceeds until the pus has found for itself an exit. During all this time the gums have participated in the disease, a red line along the free margin of the gum around the neck of the affected tooth, corresponding with the inflammatory stage of the periosteum : and as the disease increases there is a general enlargement, redness, heat, and tenderness, which may extend for some distance round the mouth, but is generally most marked at a point corresponding to the apex of the diseased root.

The symptoms accompanying this state of affairs are briefly as follows : At the very outset of the disease, when periosteal inflammation is just commencing, no very severe pain is experienced, and pressure either by closure of the jaws or by the finger, seems temporarily to relieve the slight sense of uneasiness experienced by the patient. Soon, however, pressure, instead of alleviating, increases the pain, the parts having become hyperæsthetic ; and as the tooth is now, by exudation and thickening of the periosteum raised in its socket, closure of the jaws causes great agony. This tenderness on pressure forms for us a very valuable diagnostic sign, for in many cases the patient is unable to localise the pain, when by gently tapping with the handle of an instrument the teeth on the affected side, we are able to recognise the offender. This "tenderness on pressure" is in many cases so severe, and gives rise to such extensive sympathetic pain in other teeth, that great care must be exercised in the examination of the mouth, as sometimes the mere touch of the finger is sufficient to produce a severe paroxysm of pain.

The pain has now assumed a dull and heavy character, and although it may cease for short intervals, always returns, and is increased by patient going to bed, or assuming the recumbent posture. Feverish symptoms to a marked degree often accompany this stage of the disease. When pus begins to form, the pain somewhat abates, but continues until the pus has found an outlet, when almost instant relief from the more severe symptoms is experienced.

The escape of pus, however, when left to itself, is generally a lengthy and painful process. In the generality of cases the abscess opens into the mouth at the level of the apex of the fang from which it has originated, on the external surface of the alveolus, which course is the shortest and most favourable for treatment. In this situation it may assume a chronic form. In unfavourable cases, however, it may burst externally on the cheek, giving rise to unsightly sinuses, around the orifice of which fungus-like masses grow. Where wisdom teeth are involved it may work its way backwards and appear behind the angle of the jaw. From the incisors it may burrow along the hard palate and make its exit at the commencement of the velum. In the lower jaw where centrals are involved it may break out beneath the chin; and in other cases we may discover it in the cavity of the nose or antrum, in which latter situation it may give rise, if neglected, to very serious consequences. Suppuration in the antrum, it must be remembered, may be caused by inflammation spreading from diseased teeth to its lining membrane, and thus causing the formation of matter, without the actual bursting of an alveolar abscess through its floor.

In the early or inflammatory stage of the disease under consideration, local bleeding is the treatment which we must adopt, and by this means we may often check the disease. It is, moreover, important to diagnose the disease at this epoch. As Mr. Heath attributes the formation of many fibrous tumours of the *lower* jaw to the organisation of the lymph which is poured out, which he considers finds its way into the substance of the bone, and in some cases, instead of being converted into pus, becomes organised into the germ of a " fibrous tumour. I generally bring about the extraction of blood by passing the point of an excavator under the edge of the gum around the neck of the affected tooth, and, if necessary, those adjoining it on either side. The desired result is brought about with but little difficulty, the gums being generally exceedingly vascular. Leeches may be used with equal effect. If however, the disease has advanced so far that a tolerably well defined swelling may be seen on the gum, even although pus may not be present, a free incision must be made, which, while relieving the congested condition of the part, at the same time hastens the outward progress and discharge of the forming matter.

We frequently find an abscess pointing between the teeth, both of which are in a diseased condition, and it becomes a difficult matter to decide which of the two is the real cause of the mischief. I find that by tapping them alternately with any instrument, a duller resonance is produced from the one in which the abscess has originated. Again, by opening the abscess and then exerting pressure upon the teeth in turn, the flow of discharge is increased when the affected tooth is pressed upon. These rules of course apply principally to incisors, canines, and bicuspids, and can only occasionally be with certainty relied on.

When the disease has gone through all its stages slowly, as it will do in strumous and unhealthy people, and there is a large amount of pus which seems to be extensively infiltrating the surrounding parts, or when it is discharging around the neck of the tooth, it is well to extract immediately. In doing this we should inform our patient that the operation will not afford immediate relief from all the symptoms, but, on the contrary, may perhaps slightly increase them for a little while. To allay this after-pain and to keep up the discharge of the matter, hot fomentations inside the mouth must be used.

Unfortunately in many cases the patient does not come under the notice of the dental surgeon until the abscess has burst externally in one of the situations before mentioned, or perhaps is on the point of bursting, which latter state will be marked by the skin having assumed a shiny tense appearance, and by the presence of a tolerably well defined circular spot in the centre of the swelling. In either case extraction must be immediate, and in the latter, to avoid external evacuation, the part must be painted with iodine. As the formation of sinuses is so frequently the result of poulticing and warm applications to the outside of the face, I make it a rule never to recommend them to patients as a means of alleviating the pain of toothache, although doubtless they are soothing at the onset of pain. The fungus-like masses which surround the orifices of sinuses are most unsightly, and are generally the result of neglect on the part of the patient, but occasionally also of mal-treatment. Nothing short of removal of the cause will heal these sores, and even when this is accomplished, a cicatrix varying in extent is always left behind.

I have seen one case in which the mere apex of one of the fangs of a second lower molar, which had been accidentally broken off in the extraction of the tooth, gave rise to what will prove a life-long disfigurement. In this case the patient, a young girl, was treated for some weeks, first as an in-patient, and afterwards as an outpatient, at Middlesex Hospital, for an incessantly discharging and most unsightly sinus in the cheek, which continued to throw out fungus granulations, until the real source of mischief was discovered. After the cause of irritation was removed, the sinus began immediately to heal, disinfectant mouth washes being constantly used, as the breath was rendered most offensive.

When pus is discovered in the antrum, a free communication with the mouth must be established, which is most easily accomplished by the extraction of the tooth from which the discharge has originated, and some care must be exercised in doing this, to prevent the possibility of pushing the tooth through the softened and diseased bone into the cavity. This accident does occasionally happen. When the communication is thoroughly established, free syringing with Condy's fluid or a solution of carbolic acid must be kept up.

The apparatus devised by Mr. Salter is a convenient way of accomplishing this. I am sorry to say that I have not myself seen it applied. It consists of a metal plate, which is fitted in the ordinary manner to the teeth adjoining the opening, to which is attached a tube, one extremity of which opens into the mouth, the other into the antrum. This tube may be corked up when necessary, which arrangement prevents food or other irritating matters from entering. Moreover, the tube, which is bent at a suitable curve, may be used as the nozzle of the syringe, which is a convenient method of washing out the cavity.

When "alveolar abscess" is not very extensive, and there is a well defined swelling pointing on the gum, it is amenable to treatment frequently resulting in the successful preservation of the tooth. This treatment consists in drilling into the pulp cavity if possible, and pumping in carbolic acid with a small piston composed of cotton wool wrapped round an old nerve extractor, until it is found to exude through the external opening on the gum. This treatment will in most cases eventually preserve the tooth and cure the abscess, although in some cases it is a lengthy and tedious process. It is specially applicable in cases of "chronic gumboil." Where the teeth have been stopped the operation of "rhizodontesis" may be resorted to with similar result, but of this operation I have had no personal experience. Where possible I should prefer extracting the stopping, and then treating in the ordinary way.

"Alveolar abscess" in connection with the first dentition we frequently meet with, and here I should rarely hesitate to extract, especially if the disease was of long standing or of great severity, as I consider that the injury done to the permanent dentition by long continued inflammation and suppuration is very considerable, and that the unhealthy condition of the oral secretions consequent upon a diseased state of the mucous membrane, is far more detrimental to the child than the loss of a few masticators. Of course we must do all in our power to preserve the second temporary molars until the first permanent ones have made their appearance; but I think that even this "golden rule" may be carried to an excess, for it has happened to me upon two occasions and in two different children, when at last compelled to extract a second temporary molar, to find to my astonishment that I had brought away the sac of the permanent bicuspid, bathed in pus and firmly adherent by the organised products of inflammation, Thanking you, gentlemen, for your kind attention, and apologising for the many inefficiencies of my paper, I beg to leave the subject in your hands.

Mr. FREDERICK CANTON in opening the discussion, commented on the importance of the subject and ability with which it had been treated in the paper, mentioned cases in which, after considerable periods had elapsed, although from no apparent cause, abscess had followed the putting in of amalgam stoppings; agreed with Mr. Hepburn that fomentations should be applied inside, rather than outside the mouth. In a case recently under notice, was of opinion, that by exercising this precaution, the imminent external bursting of an alveolar abscess was obviated.

Mr. W. C. S. BENNETT had recently seen some cases of amalgam fillings followed by abscess, and in which there had been no exposure of the nerves. Had found in cases of intense pain from diseased nerve the application of tincture of aconite most useful as an anodyne, and covered with a little mastic dressing.

Mr. WOODHOUSE considered that the abscess from amalgam stoppings were due to the great conducting power of the metallic stopping, and so causing death of the nerve, and felt that this view was strengthened, when we remember that in perfectly healthy teeth, death of the pulp is sometimes to be produced in this way by sudden cold. In this opinion Mr. Hammond agreed; had also found aconite of great use in relieving pain.

Mr. FREDERICK J. BENNETT had found, where the fangs of teeth were in a doubtful state, good results from leaving an opening for any discharge that might accumulate.

Mr. WILLIS wished to know what had been the experience from leaving openings as a vent, and whether they did not very readily become closed by food. Had in some cases of pivoting, and where pulp had been entirely cleared, found irritation following in the fang on wearing the pivot, and subsiding when it was taken out again, to appear when replaced.

Mr. OAKLEY-COLES, to obviate this, had made use of a hollow pin. Had found an instrument consisting of a thin slip of platinum most useful for clearing away amalgam from edge of cavity near gum. Mr. Willis also described an instrument made by Mr. Greenfield expressly for this purpose.

Mr. HEPBURN, in replying, said that with regard to amalgam, it was chiefly used where teeth were far gone, and consequently often much decayed beneath the gum, and so more likely to produce periosteal irritation. Agreed that in Mr. Bennett's cases, conducting power of amalgam was at fault. To obviate difficulties with pivots, had at first put them in loosely. Had experienced some difficulty where openings left in stoppings for discharge to escape had become plugged by food.

The fresh council and officers for the ensuing year were then nominated. A vote of thanks was proposed by Mr. F. Canton, and seconded by Mr. Woodhouse, to Mr. Hepburn, for his interesting paper. The annual meeting was announced for the third Monday in January, 1874, when a paper will be read, and the annual report of the Society be made.—The meeting was then adjourned.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ANNUAL MEETING, JANUARY 12.

LIST OF OFFICE BEARERS FOR 1874.

The following members recommended by the late Council were duly elected for the year 1874:—

President.—Edwin Sercombe, Esq.

Vice-Presidents. — Resident: Charles Vasey, Esq.; Alfred Coleman, Esq.; *John Tomes, Esq., F.R.S.* Non-Resident: Peter Orphoot, Esq. (Edinburgh); S. Clifford Gibbons, Esq. (Brighton); *T. R. M. English, Esq.* (*Birmingham*).

Treasurer.—James Parkinson, Esq.

Librarian.—Thomas A. Rogers, Esq.

Curator.—Charles S. Tomes, Esq.

Honorary Secretaries.—T. Henry G. Harding, Esq. (Council); *Edwin F. Lane, Esq.* For Foreign Correspondence: *Henry E. Sewill, Esq.* (*Society*).

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Note.—The names in the preceding list printed in italics are those of the *new* officers and councillors.

HOSPITAL REPORTS.

DENTAL HOSPITAL OF LONDON.

CASES TREATED FROM DEC. 1 TO 31, 1873.

Extractions: Children under 14	350
Adults	483
Under nitrous oxide	117
Gold stoppings	66
White foil ditto	37
Plastic ditto	98
Irregularities of the Teeth treated surgically and mechanically	30
Miscellaneous cases	148
Advice cases	29
Total	1,258

CLAUDE ROGERS, *House-Surgeon.*

LIVERPOOL DENTAL HOSPITAL.

Monthly Report ending November 29th.

Males	196
Females	213
	409
Operations, &c.	519

W. J. Newman, *Hon. Sec.*

NEW DENTAL HOSPITAL, LEICESTER SQUARE.

	£	s.	d.
Amount already received	2,929	3	6
R. C. L. Bevan, Esq., 25 Princes Gate	50	0	0
Dr. John Henry Martin, Portsmouth	50	0	0
Marchioness of Ely, per E. Saunders, Esq.	25	0	0
G. H. Makins, Esq., Walton-on-Thames	21	0	0
James Turner, Esq., George Street, W.	20	0	0
N. M. de Rothschild, Esq , M.P., 6 Buckingham Gate	10	10	0
T. H. Hills, Esq., 338 Oxford Street	10	10	0
Henry Rogers, Esq., Oatlands, per Milward Harding, Esq.	10	10	0
John Haines, Esq, Addison Road, W., per J. T. Clover, Esq.	5	5	0
Mrs. Ewart, 1 Gloucester Square, per E. Saunders, Esq.	5	5	0
Mrs. J. H. Green, Hadley, per E. Saunders, Esq.	5	5	0
— Blackenby, Esq.	5	5	0
H. C. H. Longhurst, Esq., Leicester (in 4 annual payments)	5	5	0
Arnold Pitowsky, Esq., Barnstaple (in 5 annual payments)	5	5	0
Henry Campion, Esq., Manchester	5	5	0
Mr. William Thomas, per Henry Rogers, Esq.	5	0	0
Mrs. Collinson, 7 Devonshire Place. W., per F. Saunders, Esq.	3	3	0
W. Grant, Esq., Inverness, N.B.	3	3	0
Col. Rowley Platt, per E. Saunders, Esq.	2	2	0
Mr. A. E. Anderson, per C. J. Fox, Esq.	2	2	0
Mr. Lafone, per E. Saunders, Esq.	1	1	0
Lady Howard of Glossop, per E. Saunders, Esq.	1	0	0
J. W. D.	1	0	0
Total	3,181	19	6

Obituary.

We regret to have to announce the sudden death of Francis Cornelius Webb, M.D., F.R.C.P., which took place at his residence on December 25th, 1873. Dr. Webb was, up to the time of his death, editor of the *Medical Times and Gazette*. During the existence of the College of Dentists of England he was attached to the Metropolitan School of Dental Science as Lecturer on Comparative Anatomy. Subsequently to this period, he edited, with the late Mr. Hulme, "Hunter on the Teeth." These articles appeared in the old *Dental Review*. He was the author of a paper on "The Teeth in Man and in Anthropoid Apes," and of an essay "On the Teeth in the Varieties of Man." An accomplished scholar and an amiable gentleman, he was in all that he undertook thorough and conscientious. He was not only an earnest lecturer, but a most painstaking teacher as well, and in the department of comparative anatomy of the teeth a laborious worker. At the early age of forty-seven he has died, leaving a widow and children to mourn over a loss that will be felt by them in all the relations of life. O. C.

By the death, at Carlisle, on December 17th, of Mr. John Sheffield, third son of Thomas Sheffield, the leading practitioner in the northern counties for many years, the youngest brother of the late President of the Odontological Society, the dental profession has to mourn the loss of one who, but for circumstances of a singularly adverse and melancholy nature, would in all human probability have been one of its most distinguished members. Possessing as he did one of the best known names in the profession, and being endowed, physically and mentally, with Nature's rarest gifts, it was but reasonable to predict for him a long, distinguished, and brilliant career. Such anticipations, however, were not, through the inscrutable decrees of Providence, destined to be realised. Nearly twenty years ago Mr. Sheffield, then one of the first athletes in England, was afflicted with rheumatic gout, and for the past fifteen years many of his joints were anchylosed, and racked with acute pain. His life may fairly be described as having been passed between his bed and his chair. Latterly his malady had increased to such an extent as to prevent his taking exercise in the open air, and owing to constant confinement to the house, his blood became poisoned, the kidneys ceased to act, and he died, as previously stated, on the 17th ult. Mr. Sheffield was beloved by all who knew him, his kindly genial manners endeared him to all classes, while his wit, talent, and above all, the heroic manner in which he endured his great affliction, gained him the respect and admiration of all. He was in his 54th year only at the period of his death.

CORRESPONDENCE.

CASE OF REAL DISTRESS.

To the Editor of the "Monthly Review of Dental Science."

Sir,—Will you allow me through the medium of your valuable Journal to thank most warmly those members of the profession who have so kindly and liberally responded to my appeal, in your December issue, on behalf of the widow of the late Mr. Cox Smith, Dentist, of Chatham. At the same time, may I again urge the case on the attention of those gentlemen who have not yet subscribed, and earnestly entreat them to send some small donation, if only a few shillings, to assist in relieving my widowed friend from some of the anxieties which have lately so heavily oppressed her.

With many thanks for the kind and valuable assistance that you have afforded me in my endeavours to procure subscriptions,

I am, &c., E. M. Ridpath.

9 Belsize Park, N.W.

S. A. Ridpath, Esq., 33 George Street, Hanover Square, has kindly consented to receive subscriptions.

Mrs. Ridpath begs to acknowledge the receipt of the following subscriptions for Mrs. Cox Smith:

	£	s.	d.
Amount already acknowledged	35	12	0
Christopher Heath, Esq,. F.R.C.S.	3	3	0
C. Robertson, Esq.	2	2	0
J. Gamon	1	1	0
E. Haselton	1	1	0
C. G. Nightingale	1	1	0
Total	44	0	0

To Correspondents.

All communications intended for the Editor should be addressed to the care of Messrs. Smith, Elder, & Co., 15 Waterloo Place, Pall Mall.

All inquiries respecting Advertisements and Subscriptions should be sent to George Butcher, 4, Crane Court, Fleet Street, E.C.

THE MONTHLY REVIEW
OF
DENTAL SURGERY.

No. IX. FEBRUARY, 1874. Vol. II.

THE NEW DENTAL HOSPITAL.

The Dental Hospital is fast approaching completion, and the Building Committee have well fulfilled the duties entrusted to them. Those who were most desponding as to the capabilities of the new building cannot but be satisfied with the result of the alterations that have converted three private houses into a convenient and prominent institution.

The promoters of the scheme of the "New Dental Hospital," have also to be congratulated on the good fortune that has followed them. The utilization of the barren waste in the centre of the square, through the generosity of Mr. Grant, will largely increase the value of the Hospital, and much improve the surroundings of the institution.

On one point only are we disposed to disagree with the Building Committee, and that is as to the way in which the funds have been raised.

That so large a sum as they now possess should have been raised (we believe we may say entirely) by private appeals, and the generosity of the Dental Profession, is in one sense a matter for congratulation.

But a public institution should, we submit, be brought more directly under the notice of the public, and the bulk of the money raised by a general appeal, either through the medium of the post or the public Press.

For some years the Committee of Management will have to look to the members of the profession for a large proportion of their annual income; it was, therefore, scarcely desirable that so much should have been obtained from them at the present time.

The public readily respond to special appeals for a specific object, and it is, therefore, very desirable that they should be urged to contribute largely to the building fund. At the same time we must bear in mind that it is very difficult to obtain money from the public in the form of annual subscriptions, and this is an additional reason for adopting a policy that we thus venture to suggest.

ON THE

MICROSCOPICAL STRUCTURE OF FOSSIL TEETH FROM THE NORTHUMBERLAND TRUE COAL MEASURES.

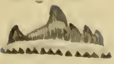
By W. J. BARKAS, M.R.C.S.E., L.R.C.P., London.

(*Continued from* page 349.)

HYBODUS.

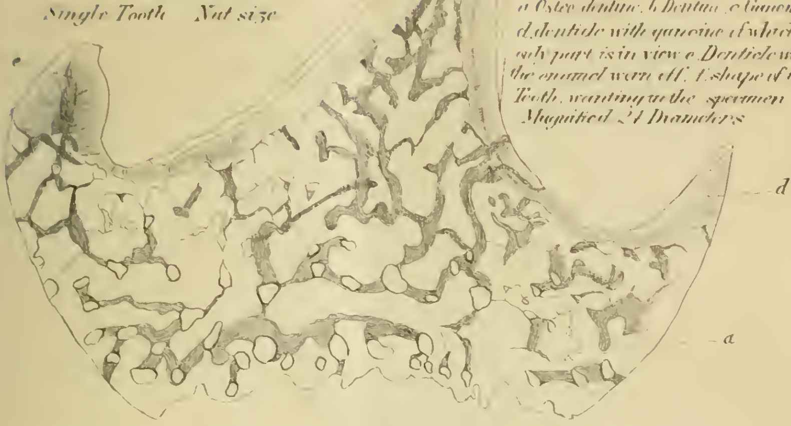
Hybodus was founded by Agassiz upon the characters of the teeth and spines which at that time had been discovered only in and above the Muschelkalk of the Triassic system, but never in the Carboniferous Strata, which are considerably below that formation. Even at the present day it is not considered that the remains of this fish have been found below strata of Triassic age, though its nearest ally, Cladodus, is sometimes discovered in the true Coal Measures. I am now in a position to prove most clearly that many of the teeth found in the Coal Measures and named Cladodus, are not Cladodus, but Hybodus; also that one of the spines of Ctenacanthus, in my possession, cannot be distinguished in any particular, from the drawings and descriptions of the spines of Hybodus, as given by Agassiz in his "Poissons Fossiles," I shall not enter into this branch of the question in these papers, for it does not pertain directly to dental science, but shall take an early opportunity of doing so elsewhere. The reason that palæontologists have never considered Hybodus as a Coal Measure fish is due, I think, to their having too readily followed the statements of Agassiz, that that fish did not exist below the Triassic formation, and that Cladodus only, its nearest ally, was to be found in the carboniferous strata. They have, therefore, named all the teeth from these measures that approximately resemble Cladodus, as Cladodus, without having taken the trouble apparently to examine the descriptions and drawings of Agassiz, in order to establish their identity. The assertion of the above writer was perfectly legitimate at the time at which it was made, between twenty and thirty years ago; and, in fact, is correct, so far as America is concerned, even at the present day, for I cannot ascertain that any other teeth than those of Cladodus have been discovered in their Coal Measures; but the Carboniferous system of Great Britain was not then so well known as it is at present. In order to prove that many of the teeth that up to this time have been named Cladodus are really

Fig VI



Single Tooth   Nat size

Fig VII



Vertical section of Teeth
a Osteo dentine. b Dentine. c Ganoine
d. denticle with ganoine of which
only part is in view e. Denticle with
the enamel worn off. f. shape of top
Teeth. wanting in the specimen
Magnified 24 Diameters

Fig. VIII

Vertical section of one of the small Denticles
Magnified 140 Diameters.
a Pulp Cavity.
b Dentine.
c Dentinal enamel.
d Ganoine.

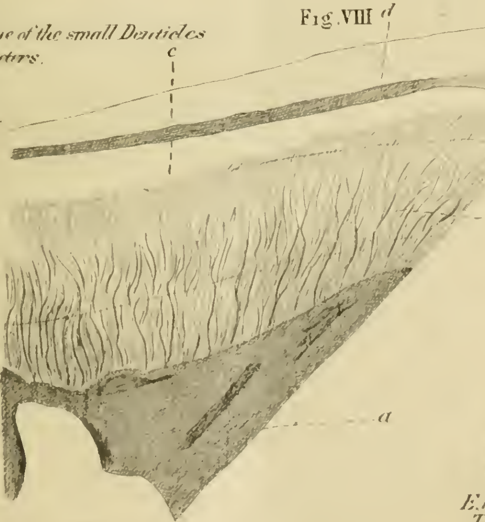
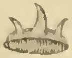
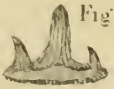


Fig X



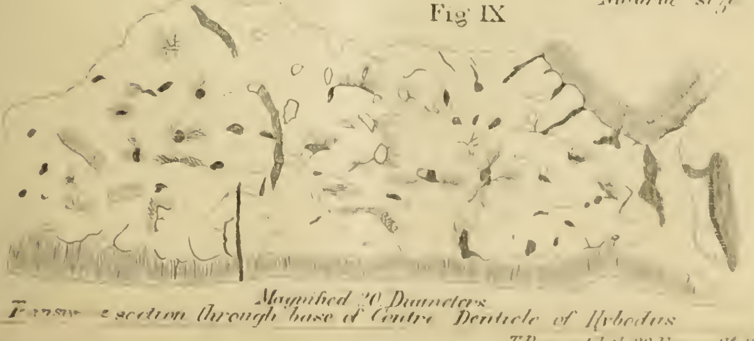
Internal aspect of
Tooth of Cladodus
Natural size

Fig. XI



External aspect of
Teeth of Cladodus
Natural size

Fig IX



Magnified 20 Diameters
Transverse section through base of Centre Denticle of Hybodus

T. Bessent lith. 29 Essex St Strand

Hybodus, let anyone compare the tooth of Hybodus obtained from the Coal Measures of Staffordshire, drawn in Fig. VI. (but which was forwarded as a perfect tooth of Cladodus), with Hybodus plicatalis and H. cuspidatus exhibited in Tables 22 and 24, of the third volume of Agassiz's "Poissons Fossiles," and then contrast it with the teeth of Cladodus I have portrayed in Figs. X., XI., also with the teeth of Cladodus engraved in Table 22, Fig. XI., of the above third volume, and in Plate 1, Fig. XVI., of the second volume of the "Geological Survey of Illinois," and they will see that the statement is not made without satisfactory foundation.

These teeth are very rare in the Northumberland and other Coal Measures, but they are discovered more frequently than the teeth of Cladodus, in this district, at least, for I have examined the cabinets of four of the principal local collectors, in which I observed nineteen specimens of Hybodus, but only five of Cladodus. In the British Museum there is not a single specimen of Cladodus from the True Coal Measures, but there are three so-called teeth of Cladodus which were obtained from the bituminous shales of Carluke; only one of them however is perfect: this perfect specimen presents all the characters I shall presently describe as pertaining to Hybodus. In the Museum there are also numerous specimens of Hybodus from the Forest Marble of Wilts, and from the Wealden of Sussex, but all those I have examined are either imperfect or have only the centre denticle exposed to view. The teeth of Hybodus have never been discovered in our Measures in position upon a jaw, nor yet associated in any number upon one slab; in fact, so far as I am acquainted with them, only one is ever observed on the same piece of shale. Agassiz, however, describes the position of the teeth in the jaw, from specimens that he had seen in the possession of Dr. Buckland, who had obtained them from the Lias of Lyme Regis. The teeth were situated in a longitudinal grove upon the superior border of the jaw, and were so placed, that the secondary denticles were anterior and posterior to the central cone. The number of teeth belonging to one jaw cannot be determined with certainty; the average appears to be between four and five. Though the teeth have never been obtained *in situ*, they have been frequently discovered buried in masses of cartilage and in shagreen,

The spines of Ctenacanthus and Gyracanthus are not unfrequently found associated with the so-called teeth of Cladodus, and it was the opinion of Messrs. Hancock and Atthey, for some years, that the latter spine belonged to the same fish as the teeth of Cladodus(?). In a paper which appeared in the "Transactions of the Northumberland and Durham Natural History Society," they withdrew this hypothesis, and stated their belief that Ctenacanthus, and not Gyracanthus ought to be considered as pertaining to Cladodus(?). Mr. Thomson of Glasgow, has also arrived at the same opinion. There is as yet no certainty as to which is the right view of the subject, but the opinion which holds the probable connection of Ctenacanthus with Cladodus(?) is, I think, the more correct of the two, for the reason that the teeth of Cladodus(?) are rare, and the spines of Ctenacanthus are equally rare, while the spines of Gyracanthus are very common. It cannot be doubted that the balance of probability is more in favour of the idea that the remains belong to one fish when rare teeth are found associated with rare spines, than when rare teeth are in proximity to spines that are often discovered, though the association should be equally frequent in both cases; because, if the teeth of Cladodus(?) belonged to a fish of which numerous spines were discovered, they would be found more frequently than the spines, for all the fishes of this family have many more teeth than spines. I have now shown that most of these so-called Cladodi are really Hybodi, and that these teeth are associated with reputed spines of Ctenacanthus.

The teeth of Hybodus in my possession vary slightly in size, their average being about one-quarter of an inch in height, half-an-inch in length, and one-fifth of an inch broad. In the specimen, Fig. VI., which is an exceedingly typical tooth, the base is very narrow, one-tenth of an inch; its external surface is smooth, concave from above downwards, and from side to side; the internal aspect is convex and strongly striated; the superior border is slightly convex, and the inferior concave. From the superior surface spring five denticles, which in their number, form, arrangement, &c., exactly correspond with the descriptions given by Agassiz and others. All the other teeth I have examined agree in their external characters with the acknowledged characters of Hybodi obtained from the Lias, &c.; I shall therefore describe them in general terms. The number of the denticles varies very much, five being the average, as in the above typical tooth; but there may be as few as three or as many as seven; the latter number is, however, rare; I only know of three specimens, one being in the British Museum, under the name of Cladodus. The denticle near the centre of the tooth is always the largest, and towers as it were, over the others, which are designated therefore secondary denticles; this enlargement of the centre denticle is quite the reverse of the arrangement of the denticles in the teeth of Diplodus, but is similar to the teeth of some of the fossil squaloids. The centre denticle is cone-shaped, compressed externally and internally, not very acutely pointed, and curved inwards; its height nearly equals its breadth at the base, the height being one-sixth of an inch, and the breadth one-fifth. The secondary denticles are arranged unequally on each side of the central cone, and they are, as a rule much smaller, though in two of my specimens they appear nearly the same height as the central; but they are not so really, the illusion arising from the excessive manner in which the centre denticle is curved inwards and downwards. The variations of the arrangement of the denticles are numerous; among my specimens, there are two with two denticles on one side of the centre denticle, and one on the other; two have two secondary denticles on each side of the central; two have three on one side and two on the other; one has one on each side; the perfect specimen in the British Museum has four on one side and two on the other. In every case where there are two or more secondary denticles on one side of the central cone, they decrease in size as they proceed outwards from the centre; in the specimen I have figured, the most internal denticle is one-tenth of an inch in height and the most external one-fifteenth. The secondary denticles are very short and thick cones, curved slightly backwards and inwards, and their height is equal to their breadth at the base. All the denticles are distinctly ridged on their external surface, the striæ running from base to apex; the internal surface is smooth and concave; the edges of the denticles are rather sharp, as is usual in sharks' teeth.

A vertical section of the tooth exhibits the different structures that enter into its composition, the most internal being vascular dentine, which forms the whole of the base of the tooth, and fills the pulp cavities of the denticles from base to apex; external to the osteo-dentine of the denticles is a layer of unvascular dentine, which extends down the sides of the base; overlapping the whole of the unvascular dentine is a coat of enamel. The osteo-dentine is permeated by numerous vascular canals, which branch and anastomose so freely in the lower portion of the base of the tooth that it is difficult to define their course, but as they advance towards the denticular border they run more and more parallel with the vertical axis of the tooth and with each other, though they still branch and anastomose. The canals are generally uniform in their diameter, but whenever they give off a branch or anastomose with another canal, they become slightly dilated at that point. Many of the canals shown in the transverse section (Fig. IX.) exhibit under a high power concentric lamellæ similar to those seen in the Haversian canals of true bone; there are, however, neither lacunæ nor canaliculi. The canals exposed in the vertical section (Fig. VII.) have their inner surface studded with numerous minute black granules, which are probably nothing more than stained siliceous remains of the vascular pulp, for they have not the appearance of being imbedded in the structure of the canal wall. When the branches of the vascular canals of the denticular osteo-dentine reach the internal surface of the unvascular dentine, they join together and form sinuses, which run up the sides of the pulp cavity and anastomose with each other at the apex. Calcigerous tubules spring from all the canals, but never in any great number; they are short, and branch once or twice before they terminate or anastomose with neighbouring tubules; their average diameter is about one-eight-thousandth of an inch.

The unvascular dentine is a comparatively thin layer, for the pulp cavities (if they can be so called when they are entirely filled with osteo-dentine) form the greater part of the denticles, its average thickness being one-three-hundredth of an inch. It is composed of calcigerous tubules, which arise from the sinuses running up the sides of the pulp cavity; their course in the body of the denticle is nearly at right angles to the superficies, but at the apex they are parallel with the axis of the denticle; in pursuing their way towards the periphery they describe two curves, the first having the concavity towards the apex of the tooth and the second towards the base; they branch dichotomously, but rarely more than twice, the branches anastomosing only towards the circumference. At their origin they measure about one-nine-thousandth of an inch in diameter, their branches about one-fifteen-thousandth of an inch. The dentine of one denticle is continuous with that of the denticle on each side of it, and the dentine on the external borders of the lateral denticles is continued down the side of the base of the tooth.

The enamel extends over the whole of the denticular surface in an unbroken layer, but its thickness varies according to the portion of the tooth examined. At the apex, where there are not any ridges, it is about one-four-hundredth of an inch, but on the external surface, where the ridges are most marked, the variations are great, for each stria is a fold of enamel. It is permeated by tubules continued from those in the dentine; their diameter is therefore about the same as the finest branches in that structure. In the tooth from which my sections have been taken the enamel has been evidently worn off one of the secondary denticles during life, for beyond the surface that would be rubbed in crushing food it is again seen; the tips of all the other denticles appear also slightly worn, though most of the enamel is still present.

For the purpose of comparing the structure of the teeth of the carboniferous Hybodi that I possess with those of the same fish from more recent formations, I obtained from Mr. Davies, sen., of the British Museum a few specimens which were found in the Forest Marble of Wilts and the Wealden of Sussex. Specimens of the teeth from the Coal and Wealden Strata were mounted for me by my assistant, Mr. Dykes; in these sections the minute structure is shown very clearly. (*a*) The differences are exceedingly slight, and the description I have given above of the minute structure of the tooth of a carboniferous Hybodus will apply also to that of the other, with two exceptions; they are, that in the latter the calcigerous tubules in the unvascular dentine are twice as large and numerous, and that the vascular canals in the osteo-dentine of the centre denticle are in rather greater number, but the latter may not be an exception, for the centre denticles of the Wealden Hybodi I have received are much larger than the same denticles of the Hybodi from our Coal Measures. The amount of osteo-dentine in the pulp cavities of these denticles will therefore be greater, and would require an increased number of vascular canals to convey the requisite amount of blood for their nutrition.

(*a*) For many of the microscopical sections used for the purpose of illustrating these papers I am indebted to Messrs. Simm and Taylor of Cramlington, Mr. Salt of Newsham, and Mr. Dykes of Newcastle-on-Tyne.

CLADODUS.

Cladodus resembles the last tooth in many respects, and was therefore classified by the late Professor Agassiz along with Hybodus and Diplodus among the sub-family Hybodontes. It has been discovered in the true Coal Measures and in the sub-carboniferous limestones, but most frequently in the latter. (*a*) The tooth is a very rare one, and if the facts I mentioned in speaking of Hybodus be correctly interpreted, it is even more rare than it is generally considered to be. Cladodus is generally found in these Coal Measures, in close proximity to shagreen and masses of cartilage. If true teeth of Cladodus have been discovered at any time associated with the so-called spines of Ctenacanthus (but which I consider as varieties of the spines of Hybodus), the fact of their ever having belonged to a fish called Cladodus will be rather doubtful, the safer hypothesis being that they were merely varieties of the teeth of Hybodus. That Cladodus is said to be found associated in these Measures with Ctenacanthus I know, but then most of the teeth commonly named Cladodus I have shown to be really Hybodus. The great point of difference between Cladodus and Hybodus is that the secondary denticles, when there are more than one on each side of the central cone, do not decrease in size as they proceed outwards, as they do in the teeth of Hybodus; but, on the contrary, increase, so that the most external secondary denticle is more developed than the one situated next to the centre cone, but it never attains the size of the principal denticle. When there is only one secondary denticle on each side of the principal cone, a considerable space is observed between them, as if a secondary denticle had been broken away, but this has not been the case, for the surface is quite smooth and intact; these secondary denticles of Cladodus are much more developed than in a similar arrangement of the denticles of a tooth of Hybodus. Another, but smaller difference, is

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(*a*) Since this paper went to press I have obtained two collections of Selachian teeth from the carboniferous limestones, one being from the carboniferous limestone of Iowa, U.S., and the other from the same formation in Yorkshire. These collections contain almost all the Selachian teeth that have up to this time been discovered in these limestones; but in neither of them is there a single specimen of Hybodus, though there are numerous and splendid varieties of Cladodus. Cladodus is therefore still, so far as we know, the forerunner of the Hybodonts in point of time, but not to the extent supposed by the late Professor Agassiz.

that the secondary denticles are equal in number on both sides of the central cone in a tooth of Cladodus. Figs. X. and XI. exhibit these characteristics very distinctly. The first is a posterior view of a tooth in my possession, and the other an anterior view of one in the cabinet of Mr. Simm, of Cramlington. In the second volume of the "Geological Survey of Illinois," there is a tooth figured in Plate I. which resembles very closely the tooth Fig. XI. All the denticles in Cladodus are cone-shaped, subulate, rather pointed and recurved, ridged on their external surface, the ridges running from base to apex ; the internal surface is smooth.

While examining the collection of Mr. Salt, of Newsham, I discovered what appears to be a variety of Cladodus, for it differs from the drawings in Figs. X. and XI. in some of its characters, but resembles them in others. The similarity consists in its possessing three denticles, the centre one being much higher than the two secondary denticles ; the secondary cones are well developed, as in the usual form of Cladodus ; the base is similar, but longer and straighter. The denticles are therefore the only portion of the tooth that present any different characteristics ; they are longer, narrower, and much more acutely pointed ; they are not curved inwards but are perfectly upright, and the external surface is quite smooth. The whole of the denticular surface is covered with a bright shining layer of enamel. The tooth is one-fifth of an inch high and nine-twentieths of an inch long. In contact with the tooth is a small quantity of shagreen.

The microscopical structure of the teeth of Cladodus I shall describe in my next paper.

(*To be continued*)

LAST spring I invested about twenty-five dollars in as many celluloid plates, and bought the celluloid apparatus complete, and followed instructions to the letter. One by one they came back on my hands, until to-day the last one, I believe, has come in, for which I thank Heaven. Some turned black as ink directly. Others, well fitting and satisfactory at first, gradually warped out of shape and fit. Others, after two or three months' wear, began to *shed the teeth*. In some I used plain, in others gum teeth. When the celluloid in the plain teeth turned black between the teeth, they looked like the deuce, and gave black satisfaction. Will some one who has so highly *indorsed* the material as a base tell me "what's the matter," and whether they have had any "better luck?"—H. P. SOUTHWICK, in *Dental Cosmos.*

A CAPPING FOR EXPOSED NERVES.

BY THOMAS FLETCHER, Esq.

In the *Monthly Review of Dental Surgery* for January, a process is given for capping exposed nerves, which although to a certain extent good, overlooks a more trustworthy process which has been for some time in the hands of many operators in England and America. In the course of a great number of experiments with the oxychlorides and the allied cements, which Dr. Schad, of Berlin, and myself have been working on for some time, we discovered a number of similar compounds previously unknown, the composition of which has been published by me at different times. Some of these have valuable properties for other than dental purposes, but several are totally free from irritant action, and some have a distinct anodyne and soothing effect whilst hardening. These compounds, although some are already in commercial use, were neglected so far as dental purposes are concerned, except that small quantities of several were occasionally made for different friends in a crude way, for want of specially constructed apparatus. On the failure of a series of experiments in hand at the time with a different object, I expended the spare time in again examining these compounds with the object of selecting the best for a nerve covering, which proved to be a basic sulphate of zinc. This, in its ordinary form, sets with water only, in a similar manner to plaster of Paris; is an undoubted anodyne, and can be applied with total absence of pain in every possible case. The weak point in this compound is, that it does not set sufficiently hard to be of much practical use except in the hands of the most careful operators, and it has only been after a very considerable amount of experimenting that a means has been discovered of making it set as hard as the oxychloride proper.

This process has been communicated to several who were interested in the matter, and has been in use for some little time in my own laboratory. The discovery of this material certainly renders unnecessary the unpleasant and uncertain process of fixing a loose cap over a nerve, with the possibility of displacement and failure, and also with the decided objection of a cavity and air space over the nerve, which, so far as my own judgment goes, is a frequent cause of eventual failure.

This compound has also the good property of quieting excessively irritable teeth, enabling them to be filled thoroughly and permanently without pain or trouble, as it may, like an oxychloride, be left as a temporary filling for a time, where a tooth is in the first instance too sensitive to bear the rough usage necessary to make a sound gold or amalgam cover.

It is rather surprising that the hydrated compounds of neutral and basic salts of the metals and metalloids should never have been the subject of systematic study. Those known and in use up to a very recent date are undoubtedly, so far as their discovery is concerned, the result of pure accident; other compounds with different properties exist, apparently in great variety, but are commercially unknown. Take as an example the hydrated silicate of alumina and lime, known as hydraulic cement. This has been well known for many years, whilst a number of other very similar double salts, containing lime or alumina as one of the bases, have been totally unknown until Ransone took the matter up, and commenced to make ornamental stonework in moulds by several different processes.

In the experiments on cements having for their base hydrated salts of zinc, lead, alumina, boron, lime, &c., so many were found with peculiar properties of value, that a little research in this field would no doubt be well repaid.

The assistance given by Dr. Schad in these experiments, and his discovery of several of the compounds—including the one specially referred to in this paper—cannot be allowed to pass without an acknowledgment, although his own modesty and kindly feeling have kept him by his own will in the background.

DEATHS FROM CHLOROFORM.

Dr. J. Murray Gibbes, of Napier, New Zealand, writes to us: "I am sorry to have to add to the already long list of deaths from chloroform two which have taken place in this colony during the last month. One occurred in the Provincial Hospital of this province in a man suffering from epithelial cancer of the lip; and the second in the Dunedin Hospital, during an operation for removal of cancer of the breast."—*British Medical Journal.*

We learn from the Registrar-General's report that a young man, aged sixteen, died in St. Thomas's Hospital on the 17th ult., while under the influence of chloroform.—*Ibid.*

DENTAL MALFORMATIONS.

BY ROBERT BAUME.

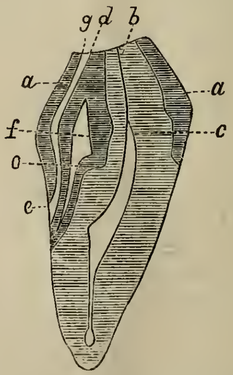
[DEUTSCHE VIERTELJAHRSSCHRIFT.]

I.—A TOOTH IN A TOOTH.

THROUGH the kindness of Mr. Wehner, of Frankfort, I am indebted for a preparation which, of its kind, is unique. For this reason I am about to give an exact description of this object, partly according to the diagnosis of Mr. Wehner.

The case under consideration is a small incisor of the upper jaw, which was developed in the canine tooth on the right side. The patient, a man of about thirty-five to forty years of age, was without the upper lateral incisors, which had never appeared. The other teeth were unusually fully developed, as is shown by the accompanying illustration of the canine tooth referred to, which shows a section longitudinally, double the natural size. The canine tooth was, in consequence of severe inflammation of the periosteum, extremely loose and very painful, so that extraction was decided upon. There was no trace of caries to be seen.

The tooth referred to was, notwithstanding its unusual size, normal in form, and easily to be recognised as a canine tooth. On account of its extraordinary size and curious appearance, the tooth was divided longitudinally for the purpose of especial examination, and at the first glance, the astonishing appearance was observed of the missing incisor of that side having been developed within its neighbour, the canine.



The relative positions, which in the accompanying figure are correctly shown (double the natural size), may be described in the following manner: First of all we see at the point *a* the well-developed enamel layer of the outer tooth (canine), at *b* the dentine, and at *c* the full but compressed crown pulp pushed sideways, placed behind the incisor, which is also lingual. In the enclosed incisor may be observed at *d* a comparatively thick enamel layer, which apparently encloses the whole crown of the tooth. The layer of enamel at the point *o* is in many folds. From the enamel layer of the crown portion a fine canal may be traced, *e*, which is mostly covered with a thin layer of enamel obliquely through the fang of the canine tooth, and finishing on the labial side about the middle of this fang. After the layer of enamel of this incisor may be observed a cavity of quite disproportionate size—the pulp cavity, *f;* the dentine layer between the enamel, *d*, and the pulp cavity, *f*, is entirely wanting, which was later quite evident upon microscopic examination. As we have previously mentioned, a hollow way, covered finely with enamel, proceeds from the encased incisor, and finishes on the outer surface of the fang. There arises, accordingly, apparently a direct communication between the pulp of the enclosed tooth and the vessels of the periosteum of the canine tooth.

On close examination of the incisor, the want of dentine and the disproportionably large cavity which must represent the pulp cavity, are very striking. Besides which, this cavity was filled with a dried substance, which was recognised under the microscope as gangrenous pulp.

As may be seen from the drawing, the neck and fang-portion of the enclosed incisor was entirely wanting, and is only represented by the thin canal covered with enamel, which runs through the fang of the canine.

The connection of the two, blended together in such an extraordinary manner, is very close, and cannot in any way be separated. We might, for example, make a section enclosing the enamel of the canine tooth and the incisor together, with the dentine, *g*, lying between *o*, without one of these parts becoming separated.

Especially interesting is the microscopical examination of this malformation. The outer tooth, beyond its unusual form, offers little out of the common; the strange arrangement of the dentinal canals being the most striking. The latter do not run regularly from all sides to the pulp (which, as we have stated, is pushed behind the enclosed incisor), but have suffered a considerable deviation, as they are apparently pushed by the incisor out of their course.

So run, for example, the canals with a thin layer of dentine at *g*, not in a horizontal direction from one enamel to the other (*a* — *d*) as might be supposed, but in a vertical direction. In the incisor they appear also to run round. That is the only anomaly which is found in the tooth, an anomaly which is characteristic in the development and origin of this malformation.

The relations of the small enclosed incisor are quite different. The considerably thick layer of enamel is rather irregularly developed. Already when seen with the naked eye it is observed that we have nothing to do with well-developed normal enamel. This is established by microscopical observation, which shows the enamel is broken through by manifold hollow spaces.

It would be expected that next to the enamel, dentine would be found. Notwithstanding the most careful examination, there is in this tooth not a trace of dentine to be found; on the contrary, the enamel layer at the side next the pulp cavity is here and there (creeky). The little inlets have the appearance of Howship's lacunæ.

Where is the dentine of the enclosed incisor? We naturally wish to establish this circumstance. There is not the slightest trace of this substance to be seen in the sections under the microscope, which were taken from half of this anomalous tooth.

From this I conclude that if dentine is present in the tooth it is in the slightest degree. Perhaps the dentine has never been developed? did it not become calcareous here? If dentine was really developed, where is it? These questions naturally occur; the answer is more difficult.

Had dentine been present in the many sections taken from various parts of the preparation, its traces must have been discovered. Unfortunately I must acknowledge, that at present I cannot decide whether the dentine was not developed, or whether it was lost later by resorption by the pulp, which was certainly present. That a tooth can be formed without dentine is, as far as we know at present, impossible. How, then, can the enamel have become developed? The view, then, that here especially no dentine was formed, falls apparently to the ground.

The other view, namely, that the dentine was later destroyed by the pulp, has much greater probability. First of all, we know that it not unfrequently occurs that the exuberant pulp resorbs considerable portions of dentine, although we have no case where the whole of the dentine has been missed from the crown. The view that the dentine was removed by supplementary resorption is strengthened by finding small inlets of the character of Howship's lacunæ on the inner side of the enamel layer. A process of resorption has therefore doubtless taken place. Therefore the supposition that the whole dentine of the enclosed incisor has been resorbed by the pulp, has the greater appearance of probability.

The origin of the malformation in question may be explained much more easily. There can hardly arise a doubt that the enclosure of one tooth germ (the incisor) in another (canine) is the answer to the question. The correctness of this assumption occurs at the first moment, and is shown by the curious diversion of the dentinal canals of the canine tooth, as has been already described. The time when the development of this malformation took place must be dated as far back as fœtal life.

Especially remarkable in this case is the appearance of this malformation on both sides of the upper jaw, as on the left side a similar canine tooth is seen, while the incisor fails. In all probability, then, the same abnormality occurs on the left side of the upper jaw. Whether the conditions are precisely similar to those we have described, we must wait to see till we can get possession of this canine tooth also, for the purpose of especial examination.

REMOVING IMPRESSIONS.

For the past fifteen years I have been in the habit of following a certain process for removing impressions from the mouth, which has given entire satisfaction in all ordinary cases, and as I have never known of any one using it beside myself, and have never seen it suggested in any dental book or periodical, I propose giving it for the benefit of any who may desire to try it. In the first place, I make a small hole in the bottom of my impression cup. I fill my cup in the ordinary way with wax, and with a suitable instrument I make a hole through the wax, directing my instrument so that it will pass out about the centre of where I wish my air chamber. I have ready about six inches of small cord, well waxed; this I pass through the wax, letting it project about a quarter of an inch, and I press the wax around it to hold it in position while I am introducing the cup in the mouth, and I withdraw it as soon as I wish to remove the impression, which will drop of its own weight, if for an upper set. I pursue the same plan for removing partial or lower sets, and in using plaster, only I put the cord through the cup, and place the plaster around it, taking care that the end of the cord is above the plaster.—*Chas. R. Reucher, Enterprise, Miss.*

ODONTOMES.

(TRAITE DES TUMEURS. PAR PAUL BROCA.)

ODONTOMES GENERALLY.

V. GENERAL STUDY OF ODONTOMES.

(*Continued from* p. 354.)

Development, symptoms, prognosis.—Odontomes are generally developed in the thickness of the maxillary bone before constituting an apparent tumour. During this first period they sometimes cause severe pain analogous to dental neuralgia, but at other times there is no pain whatever, and the first symptom is the appearance of the tumour.

This tumour occupies one of the points in the region of the molars. In the inferior maxillary it is more or less spindle-like in form, projecting generally more outwardly than inwardly; it is situated, at least at the commencement, below the level of the alveolar border. In the superior maxillary bone it constitutes a rounded projection, which raises the mucous membrane above the alveolar edge. Later, being developed in height, it finishes by touching the level of the alveolar edge, being situated immediately above the gum.

This tumour is indolent under pressure, and for a long time presents a bony hardness. But when it has extended to the alveolar border, and is only separated from the explorer's finger by the gum doubled by the membranous cyst, we feel at this level it is at the same time firm and depressible, and that it consists consequently of a solid mass, more or less supple, contained in an incomplete bony cavity.

At the same time, and in consequence of its increasing volume, it stretches the walls of the osseous cyst which contains it, and the time comes when this shell, attenuated by distension, may give way at certain points under pressure of the finger, sometimes only giving the sensation of subdued resistance, sometimes a sensation more characteristic of slight crackling, analogous to that of dry parchment.

This parchment sensation (*sensation de parchemin*), described by Depuytren, is not, as he appears to believe, exclusively confined to embryoplastic odontomes (which he calls fibrous bodies of the jaws); it can also appear not only in many other varieties as undentified odontomes, but also in cysts, and even in tumours of the maxillary bones. We must remember this last possibility in the diagnosis of odontomes. In examining that part of the dental arch which corresponds to the tumour, and comparing it with the molar region of the opposite side, the absence of one or more teeth may be generally established. The teeth afflicted with circumscribed coronal odontomes or radicular odontomes may be normally erupted, but in other cases, the tooth affected by an odontome remains enclosed in the thickness of the jaw; therefore the absence of the tooth at least may then be established. Besides this, as we have already stated, those teeth whose eruption should be effected after that of the affected tooth are often turned from their course, and cannot appear exteriorly. For example, in the case where an odontome occupies the first molar, the second and third molars do not effect their eruption. In fact, an odontome can make its appearance on a tooth before those which precede it are out of the jaw, or even before they are entirely formed, and then the tumour may, either by turning them from their course, or by arresting their development, hinder them from completing their evolution. An inspection of the dental arch allows then of the establishment, almost always, of the absence of the tooth with an odontome, and of those which follow, and sometimes also the absence of even one or two of those which precede it. This rule, nevertheless, is far from being invariable. It is only applicable to odontomes of considerable volume. It is plain that when the tumour is small the neighbouring teeth may escape its influence.

The development of the tumour is sometimes rather quick, especially in very young children. Generally, however, it is rather slow. We have even seen odontomes remain almost stationary for a great number of years, and this is why these tumours are seen in individuals of more than thirty years of age, and even in one case, in a man thirty-four years of age. (*a*) Can they become definitely stationary, and without accident exist to an advanced age? This is seen among horses, but I do not know of an example in the human subject.

There exists in the progress of odontomes a first period, during which they only provoke around them an insignificant reaction. They are indolent under pressure, and only impede mastication by the volume of the tumour that they

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(*a*) The odontomes of the supernumerary dental follicles can, as in the follicles themselves, be developed at an adult age.

produce. They can, it is true, cause neuralgic pain. They can, even in invading the back or front of their alveolar neighbours cause loosening or fall of one or more teeth. But this is not accompanied with any appreciable inflammation. This period, as has been seen, may last a long time.

In the second period, which for dentifiable odontomes coincides generally with the period when dentification is achieved, there occurs inflammation more or less intense; the tumour becomes painful, the cyst suppurates, ulcerates, and opens in the buccal cavity. The adjacent osseous tissue soon becomes the seat of osteitis, which may spread as far as the maxillary bone, and determines the fall of many teeth, causes the formation of caries, necrosis, periostitis, and osseous abscess. These abscesses open sometimes in the mouth, sometimes exteriorly, and produce a fœtid, abundant inexhaustible suppuration, which, mixing with the saliva, may give rise to putrid infection. Exhaustion and death have been more than once the consequence of such accidents. Certain odontomes, the moment their dentification is complete, lose all their vascular connections and become really foreign bodies; the accidents which we are about to indicate are then quite inevitable.

The prognosis of odontomes is then serious, but it derives its gravity from the complications which are harboured round the tumour, and not from the tumour itself. The latter does not present any of the characteristics or any of the properties which might together constitute malignity. In its period of growing it confines itself to pressing against the surrounding parts, and never invades them by propagation; it has no tendency to ulceration, it does not exercise any specific action upon the ganglions, it does not determine general infection, nor generalisation. In short, when it is entirely raised it does not offend against place nor distance.

In one word everything authorises us to class odontomes with the number of accidental productions which are the consequence of an entirely local disturbance of nutrition ; and that which in many cases still more favours the prognosis is the facility with which the tumour lends itself to enucleation, a disposition which often allows in practice of extirpation, an operation relatively of no moment, and without destroying the continuity of the maxillary.

ON THE DANGERS OF DENTITION.

By JAMES FINLAYSON, M.D.,
Fellow of the Faculty of Physicians and Surgeons, Glasgow; Assistant to Prof. Gairdner's Medical Clinique; and formerly House-Surgeon to the Manchester Clinical Hospital and Dispensary for Children.

[THE OBSTETRICAL JOURNAL.]

I. INTRODUCTORY.

VARIOUS ESTIMATES OF THE DANGERS OF DENTITION.

THE question as to the relation which the process of teething bears to infantile disease is of practical as well as scientific importance. If "there is scarcely any affection we do not meet with in one case or other of difficult dentition," (*a*) it must lie at the very root of the study of the diseases of children. If, on the other hand, "there never is and never has been since the world began any such disease," (*b*) the other view must stand very much in the way of all true diagnosis. Nor is it merely diagnosis that is involved—treatment must also vary; and so we find that the operation of lancing the gums is regarded by one as "an all-important remedy," and that he recommends us to "lance the gums *freely* and *deeply* over the greater part of their extent *daily* or *even twice a day*; (*c*) while another, "convinced from experience of its futility," has "avoided making it a source of revenue." (*d*) Such statements represent the two extremes, and nearly all intermediate degrees of opinion may be found to exist among ourselves at the present time.

It has appeared to me, from personal observation, that exaggerated and superstitious ideas regarding the potency of dentition as a cause of disease are injurious to the study of this branch of medicine, and no less pernicious in their practical operation in the treatment of children. As, however, such opinions prevail in the profession as well as amongst the public, it was thought that an investigation of the doctrine of teething at different times and in different countries might throw some light on current ideas. If it serve no other purpose it may at least help the reader to feel

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(*a*) Joseph Fox, "The Natural History of the Human Teeth." London, 1803. P. 77.

(*b*) Selby Norton, M.D., "Transactions of the Obstetrical Society of London," vol. ix., for 1869. Paper on "Teething," p. 183.

(*c*) Marshall Hall, M.D., "On the Diseases and Derangements of the Nervous System." London, 1841. Pp. 183. (The italics are in the original.)

(*d*) Dr. Hudson, quoted by Robert Blake. "De Dentium Formatione." Edin. 1798. P. 141.

that amidst such contradictory statements it is safer to trust to his own experience and observation than to follow blindly any traditions, even although they may be the latest. It may act also as a wholesome corrective to the estimate of our present controversies and of our latest and most favourite hobbies (whatever they are), to find them compared with others which, after lasting for centuries, may now serve only to excite a smile. Nor should it be forgotten that the matter does not concern an obscure disease, the recognition or identification of which may have varied from time to time: the process of dentition is one requiring no great skill for the observation of its external manifestations; the experience obtained centuries ago is fairly comparable with that of the present time. The ideas and superstitions, however, regarding this obvious process have varied in a remarkable manner. As the recognition of definite diseases has been rendered easier by the advance of science and by the introduction of new methods of research, the realm of teething as a cause of disease has tended to be narrowed. Specialists have found but little room in their studies for the operation of such a universal cause of disorder, and, if we except the revival which the doctrine of reflex nervous irritation gave to the subject of teething, the tendency has been to relegate to its influence only those affections which are more than usually obscure in their etiology.

The amount of mortality and disease due to dentition has been variously estimated—a variation which is perpetuated to the present time, as will be shown while discussing our own bills of mortality (*e*). Berdmore (*f*) estimates that one-half of the deaths under two years may be attributed to teething; another estimate (*g*) gives one-third. Stoll (*h*) thought that of those who had a difficult dentition one-third perished. A sixth part of children have been supposed by French authors (*i*) to die from this cause. Arbuthnot (*j*) esti-

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(*e*) See Section II. of this paper.

(*f*) Thomas Berdmore, "A Treatise on the Disorders and Deformities of the Teeth and Gums." London, 1770. P. 193.

(*g*) "A Treatise on the Diseases of Infants and Children." London, 1772. P. 75.

(*h*) Maxim. Stoll, "Prælectiones." Vindobonæ, 1788. Tom. i., p. 246 *et seq.*

(*i*). M. Baumes, "Traité de la Première Dentition des Maladies souvent très graves qui en dépendent." Paris, 1806. P. 101. M. Murat, Art. "Dentition," "Dict. des Sciences Médicales." Paris, 1814. Tome viii., p. 414.

(*j*) John Arbuthnot, M.D., "Nature of Aliments and Practical Rules of Diet.' Second Edition. London, 1732. P. 408.

mates the mortality at one-tenth. Harris (*k*) states that among the fatal diseases of children none give rise to so many grave symptoms as difficult dentition. Andry (*l*), says that in a great number of families most part of the children die of teething. Underwood (*m*), thinks that it induces disease more especially in the healthy and robust; while Hurlock (*n*) can only announce, as a faint consolation, that a painful and grievous dentition is not to be expected as a certain and infallible event in every child.

With all these melancholy anticipations of death and disease, with the suffering, irritability, and anxiety attendant on them, it might well have passed into a proverb that parents had no pleasure in their children till the process of teething had passed its worst (*o*). Proverbs, however, are usually one-sided, and so we find that a very different, if not opposite estimate has been made of the perils of teething. Marshall Hall, from his great carefulness in watching the process and his promptitude and energy in using the gum lancet, takes credit that he never had a death from dentition; an exactly similar claim, however, has been made by one who boasts that he leaves the diagnosis of "dental fever" to mothers, and seldom resorts to the scarification of the gums (*p*).

Indeed, while some writers seem to see in the local process of dentition an event fraught with danger to the general health and the whole economy of the child, others have regarded the irregularities and peculiarities of dentition rather as manifestations of the general condition of the infant, and have looked upon most of the disasters overtaking infants during the teething period as due to faulty management, to bad nutrition, or to some defect in their own constitution or in that of their nurses, when they were not

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(*k*) Gualterus Harris, "De Morbis Acutis Infantum." Lond. 1689. P. 93.

(*l*) M. Andry, "Orthopædia; or, the Art of Correcting and Preventing Deformities in Children." Translated from the French. London, 1743. Vol. ii., p. 159.

(*m*) M. Underwood, "Treatise on the Diseases of Children." Edited by S. Merriman. London, 1827. P. 280.

(*n*) Joseph Hurlock, "A Practical Treatise upon Dentition." London, 1742. P. 14.

(*o*) "In proverbio enim dici solet:—Donec ab oculis non sunt editi dentes, de filiis genitores non sunt gaudentes. Omnibonus Ferraius: De arte medica infantum, libri quatuor." Brixiæ, 1598. Lib. iii., p. 121. D. Sennertus also says: "Adest autem dolor maximus cum canini erumpunt unde etiam vulgatum est—Parentibus non esse gaudendum de liberis donec hi dentes erumpunt." Opera. Lugdini, 1650. Tom. ii., lib. ii., pars. i., cap. xi.

(*p*) A. Jacobi. "Dentition and its Derangements." New York, 1862. See pages 170 and 129.

to be regarded in the light of simple coincidences. The relationship existing between the quality of the milk and the earliness—and so presumably the facility—of dentition has been referred to by Aristotle (*q*) in two separate passages, and so it is probable that it was never altogether lost sight of by subsequent writers (*r*).

The phenomena of dentition, however, are so striking, and the importance of the teeth for the future life of the infant so obvious, that we need not wonder that great weight was attached to the local process.

Some indication of the importance thus attached to it in ancient times may be seen in the practice of not burning the bodies of those who died before the epoch of dentition (*s*), and in Christian times some special significance seems to have been attached to the teeth as being the seeds of the future resurrection body (*t*).

But important as the local process of dentition no doubt was, some physicians began to see that it was but one of a multitude of changes occurring simultaneously in the history of the child, and that many morbid phenomena popularly ascribed to teething could with greater propriety be referred to the other systems more directly concerned (*u*). Billard (*v*), refers the attacks of diarrhœa so common in children during the teething period, to the development of the intestinal follicles, and of the other parts of the digestive system occurring at this epoch. He likewise points out that im-

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(*q*) "Aristotelis de Hist. Animalium," lib. vii., cap. x.: "Denique omnes maturius dentiunt quorum nutrices lac habent calidius." "De Generatione Animalium." Lib. v., cap. viii.: "Lactis autem usus ipse nihil confert, quamquam lactis calor faciat ut dentes ii oriantur. Judicium est quod et ipsorum lactentium infantes qui calidiores utuntur lacte, ocyus dentiunt. Calor enim vim obtinet agendi."

(*r*) Aristotle is referred to by Mercurialis, Sennertus, and Primerosius in this connection.

(*s*) "Pliny's "Nat. Hist.," lib. vii., cap. 16, Holland's Translation. Tom. i., p. 164. Lond. 1634.

(*t*) See Tertullian (Clark's Translation), "De Resurrectione," cap. xli. This passage is referred to by several medical writers—*e.g.*, J. Riolanus, "Opera cum physica tum medica." Franc., 1611. P. 475.

(*u*) J. E. Liebich, "De dentitione difficili." Berol., 1819. "Dentitio vero non pro locali processu sed pro evolutione universali est habenda," p. 22. "Ex hac demum evolutione universali phænomena morbosa quæ dentitionis morbificæ nomine comprehendi solent; satis lucenter deduci possunt," p. 27. Barthez et Rilliet, "Traité Clinique et Pratique des Maladies des Enfants." 2ième Edition. Paris, 1853. "C'est au développement prépondérant de l'appareil folliculaire gastro-intestinal, c'est à l'accroissement rapide du système encéphalo-rachidien et à son activité fonctionelle qu'il faut attribuer une partie des phénomènes pathologiques de la dentition." Tom. i. p. 220.

(*v*) C. M. Billard, "Traité des Maladies des Enfans Nouveau-nés et à la Mammelle." 2ième Edition. Paris, 1833. Pp. 402 and 601-602.

portant changes take place in the brain of the child during the first year of its existence, and he maintains that the frequency of cerebral affections at that age ought to be attributed to these changes; this period, however, is the same as that of the appearance of the first few teeth, and as the changes in the mouth are much more obvious than those in the brain, they have received the credit of producing the convulsive and other cerebral disorders of infancy. Doubts, indeed, as to convulsions and other infantile diseases being due to teething, could not fail to arise in a critical mind. Guersent (*w*), after narrating a case in point, admits that many errors must have been made in referring to dentition convulsions really due to cerebral disease.

De Haen (*x*) gives two instances of convulsions, which at first obscure, were cleared up by stripping the children. In the one case a pin was found sticking in the skin; in the other case a mercurial preparation had been applied by the nurse to the foot of the infant. The latter case must have been all the more suggestive of dentition, in that salivation was a marked symptom, and if the attention had been concentrated on the mouth, no doubt the disease might have been plausibly referred to it. Armstrong (*y*) seems to have had some doubts about referring the convulsions of children during the period of dentition to this cause, alleging that convulsions occurred before and after the usual periods of cutting the teeth, and that these were of the same character as those which happened during the process.

But from what age may symptoms fairly be referred to dentiton? The earlier authors (*z*) seem to have contented themselves with regarding the date at which the teeth usually appear as the date also of the symptoms referrible to this cause; in this view the seventh month may be named. Soranus (*a*) suggests that means of mollifying the gums may be commenced about the fifth month, so as to anticipate the dangers of the seventh. But physicians could not forget

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(*w*) M. Guersent, Article "Dentition," "Dictionnaire de Médecine" (en 30 tomes). Paris, 1835. Tome x. p. 133.

(*x*) Ant. De Haen, "Prælectiones in Hermanni Boerhaave Institutiones Pathologicas." Viennæ, 1780. Tom. i. p. 531 (§ 234).

(*y*) George Armstrong, M.D., "An Account of the Diseases most Incident to Children." New Edition. London, 1783. P. 76.

(*z*) Galen, Kühn's Edition. Vol. xvii. pt. ii. 629. "Paulus Æginetæ," Sydenham Society's Translation. London, 1844. Book i. sect. 9. "Aetius Tetrab." i. serm. iv, c. ix. "Oribasius Synopseos," lib. v. c. ix.

(*a*) Sorani Ephesii Liber de muliebribus affectionibus. Recensuit et Latine interpretatus est Franciscus." Z. Ermerins. Traj. ad Rh. 1869. Cap. xl. (This chapter is supposed to be the work of a later writer.)

that symptoms almost precisely the same as those usually attributed to teething were frequently observed before the time for the appearance of the teeth had arrived, and that these symptoms, at whatever age, frequently appeared and subsided without any fresh tooth coming to the surface. (*b*) To account for such cases the theory was started that the first set of symptoms might be due to the deeper processes of teething (*c*)—"to the opening of the jaw by the tooth;" (*d*) and the second set to the piercing of the gums. This double set of dangers for every one of the twenty milk teeth affords sufficient scope for the physician to set down any illness he may please during this period, as coincident with and dependent on the process of dentition. Accordingly, we find that one writer is convinced of the error of waiting till the sixth month before attributing infantile diseases to teething; (*e*) another authority begins to suspect teething as the cause of illness after the child has reached his fourth month; (*f*) a third somewhat arbitrarily assigns the date of birth as the beginning of the troubles of dentition; (*g*) while a fourth states somewhat vaguely that dentition "is a disease of early age, and indeed almost begins with life." (*h*) It is rather surprising that no writer (so far as I have noticed) has sought to connect distinctly congenital disorders, such as club foot, with the development of the fœtal teeth. It is evident that to date teething from birth, as Marshall Hall (*g*) seems to do, is very arbitrary, and the congenital club foot may surely with as much reason be referred to the irritation of teeth as the similar deformity which results from the

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(*b*) "Chaque jour dans la pratique, on peut s'assurer que la sortie d'une dent ne succède pas toujours à cette série de symptômes. Fréquemment il arrive que l'orage s'apaise sans que la cause pour laquelle il s'était élevé ait disparu, et l'on voit ainsi se reproduire à plusieurs reprises tous les phénomènes morbides avant que la dent ait franchi l'obstacle qui s'oppose à son sortie." Barthez et Rilliet, "Traité des Maladies des Enfants." 2ième Edition. Paris, 1853. Tome i. p. 218.

(*c*) "Duplex est dentitionis tempus, infantibus molestum: unum quo dens maxillari primum emergere nititur," &c. Harris, "De morbis acutis infantum." London, 1689. P. 95.

(*d*) Sydenham, Sydenham Society's Translation. London, 1848. Vol. ii. p. 374.

(*e*) B. W. Richardson, "On the Medical History and Treatment of Diseases of the Teeth and the Adjacent Structures." London, 1860. P. 127.

(*f*) Nicholas Rosen von Rosenstein, "The Diseases of Children." Translated into English. London, 1776. "As soon as a child arrives at the age of four months and becomes indisposed, we generally suspect its indisposition is occasioned by its teeth." P. 21.

(*g*) Marshall Hall, "On the Convulsive Affections of Infants, and especially Laryngismus." London Medical Society, May 17, 1847. (Reprint.) "Dentition, as I understand the term, begins at birth." P. 18.

(*h*) John Hunter's Works, edited by Palmer. London, 1835. Vol. ii. p. 105. Hunter probably referred to birth in the passage quoted.

so-called "dental paralysis" affecting young children. While such an innocent-looking thing as the growth of the hair of the *fœtus in utero* has been supposed potent enough to induce sickness in the pregnant mother, (*i*) it seems hard to deny to the process of fœtal dentition any share in the abundant disorders of the fœtus itself.

With an available range of time extending almost from the beginning of life up to the completion of dentition, it is evident that it must depend very much on the preconceptions of the physician as to which, if any, of the numerous ailments of infancy he is entitled to refer to teething. Some, indeed, have sought to substitute for this process other causes nearly equally universal, and they have not found it difficult to refer to them a multitude of diseases usually attributed to dentition. Dr. Ballard (*j*) finds in the various forms of fruitless sucking a potent cause of infantile derangement, and it takes the place of dentition so efficiently that he can make no room for this process in the nosology. Dr. Norton, at the Obstetrical Society, likewise contended that teething ought to be expunged from our list of disorders, and he regarded the evils usually ascribed to dentition as "due to the universal but unphysiological practice of feeding infants on starch food."(*k*) These two ideas have, at least, the merit of basing their pathology of infantile disease on some departure from the normal or physiological process of nutrition, and if some departure be thus implied, some hope of averting the dangers may confidently be entertained. But there is reason to fear that it is precisely from its fatalistic tendency (*l*) that

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(*i*) . . . . . "because the Child's haire is bred and grown great which some hold to be partly a cause of this sickness. Plinie writes that women with Child feel themselves worse when their Child's haire begins to come and chiefly about the new of the Moone. "Happy Deliverie of Women." By James Guillemeau. London, 1612. P. 37.

(*j*) Thomas Ballard, "A New and Rational Explanation of the Diseases Peculiar to Infants and Mothers." London, 1860. "I am not aware that [fruitless] sucking has ever before been regarded as a cause of infantile disease; but if it had, I have no doubt that it would long ago have taken the place of teething, that bugbear of anxious mothers and the nursery!" P. 25. Again: "I have observed and reflected very carefully upon this subject, and have seldom or neuer been able to satisfy myself that any illness depended upon the development or evolution of the teeth." P. 24.

(*k*) Selby Norton, M.D., paper on teething, "Transactions of Obstetrical Society of London." Vol. xi. London, 1870. See also in this connection, Dr. C. H. F. Routh, "Infant Feeding." London, 1863.

(*l*) A. Jacobi, M.D., "Dentition and its Derangements." New York, 1862. "I once read the newspaper announcement of the death of a child, in which the parents, while inviting all their friends and acquaintances to attend the funeral, affirmed that 'the Lord hauled the dear child up to heaven by the teeth.' Now, in this case, neither the father nor mother was at fault." Pp. 6-7.

the doctrine of teething as a cause of disease is so popular on all hands. If a child die from "its teeth," as is said, it is regarded as having succumbed in the course of a necessary process for which neither parents nor nurse can be in any way blamed, and if the doctor have scarified the gums or done whatever is popular at the time, he too can join in the self-satisfied lament as if over an inevitable catastrophe.

But even among those who do not readily wish to acknowledge every illness during the teething period as due to this process, two sets of symptoms deserve special consideration: those which from their local nature seem directly related to the teeth, and those which either occur or subside about the time of the appearance of a given tooth.

There is a general agreement regarding the possibility of obviously local inflammations being due to dentition, (*m*) but it is seldom that these can be regarded as so serious as to give rise of themselves to general constitutional disturbance. (*n*) Even local inflammatory changes, however, must be referred with caution to the presence of the protruding tooth. Billard narrates two observations (*o*) in children a few days old, and a third in a child who had cut the whole of the first teeth, (*p*) which serve as a warning against too readily attributing inflammation in the gums of an infant to the process of dentition.

With regard to the symptoms of an illness actually concurring with the visible protrusion of the teeth, the possibility of a mere accidental coincidence must be carefully considered, and with so many teeth to account for we must be prepared to find some of the numerous ailments of infancy concurring in point of time with the appearance of some of the twenty teeth. Rilliet and Barthez (*q*) speak of having

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(*m*) This is admitted even by those who may be regarded as holding extreme views. See Jacobi, "Dentition and its Derangements." New York, 1862, p. 139; and Wm. Cadogan, M.D., "Essay upon Nursing and the Management of Children. Fourth Edition. London, 1750. P. 35.

(*n*) "Il est possible que l'inflammation gingivale produit par l'éruption dentaire soit assez prononcée pour causer la sècheresse de la bouche, la rougeur générale de la membrane muqueuse de cette cavité, tous les caractères, en un mot, de la stomatite érythémateuse accompagnée de fièvre, d'agitation, de cris continuels; mais il faut convenir que cela n'arrive pas le plus communément." Billard, "Traité des Maladies des Enfans Nouveau-nés et à la Mammelle. 2ième Edition. Paris. 1833. P. 269. J. Hunter's Works, edited by Palmer. London, 1835. Vol. ii., p. 107: "The Local inflammation is not great."

(*o*) "Obs. xv.: M.M., âgé de 6 jours. Tuméfaction de la gencive épanchement de sang dans les alveoles. Obs. xvi.: A. G. âgée de 20 jours. Muguet, congestion sanguine et destruction des gencives, toux suffocante, gastrite."

(*p*) Billard, Op. cit, p. 269.

(*q*) Barthez et Rilliet, "Traité Clinique et Pratique des Maladies des Enfants." 2ième Edition. Paris, 1853. Tome i., p. 219-220.

seen a difficult dentition concurring so exactly with the development of meningitis, that they were at first at a loss to know whether the illness were due to a single or a double cause. They also warn us against too readily regarding the gravity of an illness during the teething period, or even concurring with the teething process, as being due to this fact. They testify to having seen one or several teeth piercing the gum during the course of meningitis, pneumonia, enteritis, and typhoid fever, without difficulty, and equally without any favourable modification of the course of the illness.

This leads us to the consideration of the other phenomenon already referred to, which is perhaps even more striking to the popular mind—the more or less sudden subsidence of symptoms about the time of the appearance of a tooth. It must be remembered that although the distinguished authorities just quoted refer to cases in which teething went on in the midst of grave disease, this is not a usual occurrence; the common event is the cutting of a tooth *after* an illness which may with great propriety be regarded as having arrested its progress; and this of course may lead to the erroneous notion of the illness having been due to the struggles of the tooth to reach the surface.(*r*)

The cases in which certain symptoms recur with the cutting of every tooth, without any other obvious cause, constitute by far the strongest argument in favour of their depending on dentition, (*s*) and when such an occurrence is well marked and carefully observed, it is not easy to overcome the force of its persuasion. (*t*) Nor, indeed, is it the object of the present paper to deny that any illness is caused by teething. Its purpose will be served if (as Wichmann (*u*) says) the reader be kept from attributing too much to dentition, remembering that this is not the only source of infantile disorders during the teething period, and searching carefully for other causes before the illness is referred to a physiological process. (*To be continued.*)

(*r*) Jacobi, "Dentition and its Derangements." New York, 1862. "During convalescence the tooth cuts. . . . You say the child cut a tooth after it was well enough. She (the mother) says it got well after it cut a tooth." P. 172.

(*s*) E. Bouchut, "Traité Pratique des Maladies des Nouveau-nés des Enfans à la Mammelle et de la Seconde Enfance." 5ième Edition. Paris, 1867. P. 456. Trousseau, "Clinique Médicale." Paris, 1862. Tome ii., p. 467.

(*t*) Dr. B. W. Richardson gives an unusual case in which boils appeared with each tooth. "I may add without exaggeration that with every tooth a boil was produced." "On the Medical History and Treatment of Diseases of the Teeth." London, 1860. P. 135.

(*u*) Wichmann, Ideen zur Diagnostik; analysed as far as teething is concerned in *Medical and Physical Journal*, vol. iv. London, 1800.

THE LAWS OF TRANSMISSION OF RESEMBLANCE FROM PARENTS TO THEIR CHILDREN.

BY JOHN STOCKTON HOUGH, M.D., OF PHILADELPHIA.

(*Continued from page* 371.)

"It has long been a prevalent idea," says Carpenter (*a*), "that certain parts of the organism of the offspring are derived from the male, and certain other parts from the female parent; and although no universal rule can be laid down upon this point, yet the independent observations which have been made by numerous practical 'breeders' of domestic animals (both mammals and birds) seem to establish that such a *tendency* has a real existence; the characters of the *animal* portion of the fabric being especially (but not exclusively) derived from the *male* parent, and those of the *organic* apparatus being in like manner derived from the *female* parent. The former will be chiefly manifested in the external appearance, in the general configuration of the head and limbs, in the organs of the senses (including the skin), and in the locomotive apparatus; whilst the latter show themselves in the size of the body (which is primarily determined by the viscera contained in the trunk), and in the mode in which the vital functions are performed. Thus the *mule*, which is the produce of the male ass and the mare, is essentially a *modified ass*, having the general configuration of its sire (slightly varied by equine peculiarities), but having the rounder trunk and larger size of its dam; on the other hand, the *hinny*, which is the offspring of the stallion and the she-ass, is essentially a *modified horse*, having the general configuration of the horse (though with a slight admixture of asinine features), but being a much smaller animal than its sire, and thus approaching its dam in size, as well as in the comparative narrowness of its trunk."

The same distinguished authority cites "a case in which a setter-bitch having been 'lined' by a pointer, bore three pups; two of these (one a male) seemed exclusively to resemble the father, appearing to be perfect pointers in configuration, and growing up with the habits of that race; whilst the third (a female) seemed equally to resemble its mother, being apparently a true setter both in structure and instinct. Yet, notwithstanding this apparent restriction, it subsequently appeared that the pointer-pups must have

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(*a*) Physiology, p. 785.

something of the setter in their constitution, and the setter-pups something of the pointer. For one of the pointer-pups (a male) having been matched at the proper age with a pointer bitch of pure breed, one of the pups borne by the latter was a *true setter* exactly resembling its paternal grandmother, and another was *setter-marked;* and the setter-pup (a female) having been lined by a setter-dog of pure breed, there were amongst its litter of pups two *pointers* resembling their maternal grandfather. The same variety presents itself to even a greater degree in the human species. . . .

"One of the most remarkable cases of this kind known to the author, is that of two sisters who seem to resemble each other in no one point of configuration or mental character; but of whom one bears a most striking resemblance, both in person and in mind, to her father; whilst the other no less strikingly resembles her mother. The only peculiarities which at all indicate their relationship are a gouty diathesis which they both inherit from their father, and an idiosyncrasy in regard to opium, of which neither is able to take even a small dose (in any form whatever) without violent vomiting" (*a*).

Mr. Orton (*b*) "refers to Mr. Bakewell's Dishley sheep, as deriving and maintaining their celebrity through the ewes. And he adduces an observation which, if well founded, is of great pathological importance, and of especial interest to members of the medical profession, as well as to the directors of associations for life insurance. It is this: that diseases of the vital organs (and it may be presumed, therefore, diseases primarily involving the vital functions of nutrition and secretion) are transmitted oftener, and in a more intense form and degree, on the side of the mother than that of the father. And he adds that, in the matter of life insurance, he has long been in the habit of judging of the value of a life by the family history on the female (mother's) side. (*c*) In perfect accordance with this position, and, if well founded, in their degree confirmatory of it, two observations may be cited: *first*, that the daughters of a woman who has herself borne a large family, are often equally prolific as their mother, a fact, if it be one, not without interest to those to whom an heir-male of

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(*a*) Op. cit. p. 785.

(*b*) Dr. Harvey's review of Mr. Orton's paper on the "Physiology of Breeding" (Newcastle Chronicle, March 10, 1854), in Edin. Med. Journ., August, 1854, pp. 113—4.

(*c*) I have interpolated the word mother's, because I believe it makes the meaning of the author more explicit. He probably refers to the examination of *men*, who according to the views advanced in this paper, resemble their mothers more than their fathers. But if he were examining women, it is probable that he would pay more attention to the father's side.

their own body is an object; the second, that the daughters of mothers that have borne twins oftener than other females give birth to twins.

"In connection with this branch of his subject, Mr. Orton draws a distinction between a part or organ, including its vital endowments, and the *quality* of the organ and its endowments. And while maintaining that the outer structures are chiefly furnished by the male parent, he equally holds that the *quality* of these, as of all the organs, comes mainly from the female. By quality, he obviously means what the older physiologists included under the term *vis vitæ*, or what in ordinary language is called *stamina*. It is not, for example, the special endowments of the nervous and muscular systems, the powers of contractility and nervous agency, considered *per se*, which he says are given by the female, but the quality of these is now defined and may be good or bad. This allegation he illustrates by a reference to the 'short-horns,' and Mr. Bakewell's breed of sheep. But it will perhaps be best understood by a reference to the horse. 'The Arab,' he says, 'will let you have his stallion, but his mare at no price. He cultivates *endurance* and *bottom*, and the female gives them. He does not know the law we are promulgating; but he acts as if he did, for experience has taught him. The English breeder, on the other hand, values the stallion. He cultivates *speed*, and finds that the sire gives the locomotive organs; consequently his value, just the reverse of the Arab; his mare is easily got at, but his stallion is priceless.'"

Dr. Harvey (*a*), declining to give an opinion regarding it (Mr. Orton's theory), says: "It may be remarked in passing, that while *talent* is notoriously in the male line, it has often been observed of individuals that have risen to distinction among their fellow-men, either by their *power* of intellect or *force* of character, that they have owed their pre-eminence to their mother."

According to Dr. Harvey, (*b*) "Mr. Orton's argument is, that in the reproduction of the animal species there is no casual blending of the parts and qualities of the two parents, but that each parent contributes to the formation of certain structures, and to the development of certain qualities. And, advancing a step further, he maintains that the male parent

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(*a*) Op. cit. p. 114.

(*b*) Alexander Harvey, M.D., "On the Relative Influence of the Male and Female Parents in the Reproduction of the Animal Species." Edinburgh Monthly Medical Journal, August, 1854. Review of Mr. Orton's article on the "Physiology of Breeding," in Newcastle Chronicle of March 10, 1854.

chiefly determines the external character, the general appearance—in fact, the outward structures and locomotive powers of the offspring (*e.g.*, the brain, nerves, organs of sense, and skin, and likewise the bones and muscles, more particularly of the limbs), while the female parent chiefly determines the internal structures and the general size and quality, mainly furnishing the vital organs (*e.g.*, the heart, lungs, glands, and digestive organs), and giving tone and character to the vital functions of growth, nutrition, and secretion.

This, then, is the law which Mr. Orton, of Sunderland (a practical breeder of animals), claims to have worked out by independent observation, though he accredits the discovery to the late Mr. Alexander Walker (*a*).

"It is an error to suppose that the male transmits certain characters and the female other characters; though, no doubt, from unknown causes, one sex sometimes has a stronger power of transmission than the other, ... for certainly they (the sexual elements) do not in ordinary cases differ in their power of giving character to the embryo" (*b*).

Concerning the cause of the exterior or animal life following that of the father, and the interior or vegetative resembling that of the mother, the following may serve to explain :—

"While the fœtus is developed from that part of the ovum called by physiologists the *germinal* membrane, this membrane itself consists of *two* layers, an outer and an inner, called respectively the *serous* and the *mucous*. Of these layers, each gives origin to a special set or system of organs; the outer (or serous) to the brain, nerves, organs of sense, and integuments, and likewise to the bones and muscles; the inner (or mucous) to the lungs, glands, digestive organs, &c.

"That is to say, the outer layer gives rise to the whole set of organs concerned in the strictly *animal* functions, while the inner layer gives origin to those concerned in the strictly *vital* functions" (*c*).

The heart and blood-vessels, according to this authority, "would appear to be either the joint production of the two layers or to originate in an intermediate layer subsequently developed and called the *vascular* layer. He suggests, however, that the vascular system may stand in the same subordinate relation to the vital organs and their functions as the osseous system does to the muscular.

(*a*) Intermarriage, etc. Lond. and Phila., 8vo.

(*b*) Darwin, An. and Pl., vol. ii., p. 360.

(*c*) Alexander Harvey, M.D., "On the Relative Influence of Male and Female Parents, etc." Edin. Med. Journ., August, 1854, pp. 115—6.

The fact of the father influencing most the exterior organs and the mother most the interior, is ascribed to the discoveries of Bischoff, Wagner, and Newport, that the spermatozoa do not appear to penetrate beyond the *exterior* layer of the germinal membranes from which the exterior organs take their origin. Dr. Harvey says: " As the spermatozoon comes first into contact with the *exterior* of the ovum and disappears while lying there, it seems not unreasonable to suppose that its influence while extending to the outer layer may be in a great measure confined to it.

Dr. Mapother explains this phenomenon in much the same way. According to this authority, " the influence of the male has been said to bear more upon the apparatus of animal life, as the spermatozoa do not probably reach deeper in the ovum than the serous layer of the germinal membrane, while the mother is more apt to share peculiarities in the organs of vegetative life " (*a*).

(*To be continued.*)

FOREIGN BODY IN THE ŒSOPHAGUS.

Dr. D. E. Smith relates the case of a young married woman, who, during an attack of puerperal convulsions, swallowed a partial set of false teeth, four in number, and fastened with a gold clasp. They remained for three days in the pharynx, which was not examined by the attending physician, who declared it to be impossible that the teeth could have been swallowed. At the end of this time, her ingesta having in the meantime been completely fluid, she ate a small piece of beef-steak, in company with which the teeth passed down the œsophagus to a point near the cardiac orifice, where they were arrested by the hook of the clasp penetrating the œsophageal wall. The patient remained in this condition for three months, gradually growing weaker, and undergoing treatment for indigestion, general debility, incipient phthisis, &c., her physician persistently denying the presence of the teeth. A post-morem examination disclosed the facts to be as above related. —*New York Medical Review.*

Mr. John Barrow (Manchester Literary and Philosophical Society, Microscopical and Natural History Section, April 21, 1873) recommends naphthalin as a material for embedding soft tissues for the purpose of cutting sections. The advantages claimed for naphthalin over wax and other substances are:—A low fusing point, absence of contraction, the minimum of injury to the edge of the knife, and very ready solubility after cutting in benzol or spirit, so that the substance is at once removed from the section without injury.

(*a*) Physiology, p. 375.

KÖHLER ON LOCAL ANÆSTHESIA FROM SAPONIN.

(LONDON MEDICAL RECORD.)

THE *Berliner Klinische Wochenschrift* for July 6, 1873 (No. 27), contains a review of a monogram by Dr. Köhler, entitled "Die lokale Anasthesirung durch Saponin: experimental-pharmakologische Studien," which offers several points of interest to both medical and surgical readers. This work is the outcome of very numerous experiments made on frogs, dogs and rabbits, with a view of determining the physiological effects of this substance. Pelikan was the first to discover its local anæsthetic effects, and Köhler has not only confirmed his statements, but brought out new and interesting facts. Saponin, or struthin, variously called githagin, quilajin, senegin, and monesin, is a glucoside, and occurs in many plants of the natural orders of the Silenæ (*e.g.*, Saponaria officinalis), the Polygalaceæ (*e.g.*, Polygala senega), of the Spireæ (Rosaceæ) (*e.g.*, Quillaja saponaria), and the Sapotaceæ (Cortex monesiæ); it is an amorphous white powder, with neutral reaction and sweetish taste; it is soluble in water, forming a foaming fluid like soap-suds. The experiments made on it proved its local effects, as well as those on the muscles and nerves of the extremities, by subcutaneous injections on the exposed hearts of frogs, on the intestines, and on the nervous centres by direct application to these organs; then the general effects from injections into the jugular veins; and lastly, the symptoms produced by its introduction into the stomach. The most important local effects are as follows: Five minutes after the application of a few drops of a concentrated solution there occur perfect suspension of the reflex irritability of the part selected, and paralyses of both motor and sensory nerve-filaments. Shortly afterwards, the muscles of the part lose their power of responding to chemical, mechanical, or electric irritants, and this may occur somewhat independently of the nerves. The nerve-trunks, and afterwards the nervous-centres, do not become affected till larger quantities of the solution are applied, and then probably by absorption, as the effects become general. The capillaries, at the spot selected for injection, become greatly contracted, and so do the larger vessels, such as the vena cava and aorta, when the saponin is applied directly to them. When it is applied directly to the heart, the beats of this organ gradually become less frequent, and then cease altogether. This effect does not depend upon irritation of the terminal branches of the vagi, but on paralysis of the accelerator nerves (sympathetic), which thus raises the 'tonus' of the vagus filaments. Finally, paralysis of the cardiac ganglia themselves (*i.e.* of those embedded in the muscles of the heart) ensues. In a like manner, direct application of the solution to the abdominal organs first paralyses their muscles and then their nerves. Local application to the nervous centres induces, at last, complete paralysis of these organs. This spreads peripherally from the spinal cord, and continuing to affect the medulla oblongata and the cerebrum, produces asphyxia (stoppage of respiration), deep coma, and dilatation of the pupils. The series of experiments made by injecting saponin into the vena cava of warm-blooded animals produced these effects : diminution of blood pressure, succeeding a slight temporary increase of it ; reduction of temperature and of the frequency of both respirations and cardiac contractions. The effects on respiration and upon blood-pressure are produced through the nervous centre for these functions. The spinal cord and the peripheral muscles and nerves are not paralysed by these injections into the veins. Lastly, when saponin is introduced into the stomach, blood-pressure is reduced, and pulse, respiration and temperature, all sink, though slowly; paralysis of the extremities (as in the injections into the veins also) does not occur in this case. No alteration in either the quantity or quality of the excreta have been observed. Clinical practice only can decide whether saponin may play a great part in surgery as a local anæsthetic—the experimenters believe that to be probable—meanwhile the physiological effects (on the heart and respiration, &c.) deserve further study, as it is very possible that larger doses may be safely given to human beings than were tolerated by any of the animals experimented on. W. Bathurst Woodman, M.D.

AMERICAN DENTAL ASSOCIATION.

The subject of Dental Chemistry was taken up, and Dr. M. H. Webb read a paper on "Anæsthesia."

Dr. Atkinson objected to calling this a paper on Dental Chemistry. He thought it was, however, indicative of fresh thought. Privity of oxygen, he claimed, was the true cause of anæsthesia. He thought all anæsthesia was of Satan.

Dr. Buckingham excepted to Dr. Atkinson's views in regard to all anæsthesia being due to privity of oxygen, else hydrogen and other harmless gases which have no oxygen would produce anæsthesia, which they do not.

Dr. Whitney, of the Sandwich Islands, being called upon, said : During the four or five years I was on these islands, I gathered some facts which seem to bear on the point at issue in the beginning of this discussion. Formerly all burials were made in caves, so that 10,000 skeletons to-day may be found in these caves. An accurate history kept by the people enabled me to determine exactly when fruits and acids were imported into the islands. I thought now, can I, knowing these things, determine anything definitely in regard to the effects of acids on the teeth ? I went through the caves and examined the teeth of the oldest skeletons, before fruits were brought on the island, and I found that though not perfect they were not by one-half per cent. so much decayed as those of later times. So marked was the difference that I could mark the time when fruits were introduced by the teeth of the skeletons. In those fed on fruits there was one in fifty decayed; in the older, one in one hundred.

The Committee on Local Societies was called, and Dr. Judd said that Dr. Palmer, of Syracuse, had prepared a report, and had been expected to attend the meeting; but not having done so, he asked further time, which was granted. He had attended the Illinois State Association, and had done all he could to enlighten them.

Professor TAFT said that he had visited some twenty-four societies during the last year. He was glad to see them working so harmoniously, and he reported a great progress in almost every interest. He thought these visits should be kept up—they stimulated the local societies to work. Some of them so appreciated them as to pay Dr. Palmer's expenses to come among them to operate for their instruction. Dr. Atkinson, he said, was doing a great work in this direction. The pleasure that it gave the societies to receive their visiting brethren fully repaid them for going.

Dr. ATKINSON said: My intercourse among the various societies has been very pleasant, especially in the South. There they fight and quarrel, and say I'm wrong, and all that; but when I convict them they are convicted all over. They are honest, and when they give up it's all over, and they go to work on what they have learned; but these New England fellows are hard to convict. They think they are the hub, you know, and when you show them the truth they say, "that's so," and all that, but they are only convicted on the surface. If you go back to them after awhile, you'll find them sunk right in the old ruts again. Dentistry is moving on. Men are getting clear, and I hold that we to-day are the highest representatives of scientific progress on earth.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Mr. W. K. Parker, F.R.S., will deliver eighteen lectures on the "Structure and Development of the Skull of the Vertebrata," commencing on Monday, February 16th. The lectures will be delivered in the theatre of the College on each Monday, Wednesday, and Friday until completed.

WATSON'S MARSALA.—We have received from Mr. W. D. Watson, of Oxford Street, a specimen of his Marsala. It is a very palatable wine, of agreeable bouquet, and free from acidity. Containing a fair percentage of alcohol, it is a wholesome stimulant, and by many will be recognised as a very serviceable wine.

THE METROPOLITAN HOSPITALS.

ST. BARTHOLOMEW'S HOSPITAL

Was founded in the year 1123 by Rayhere, minstrel of Henry I., in connection with his foundation of the Church and Priory of St. Bartholomew. He designed his charity—"Ad omnes pauperes infirmos ad idem hospitale confluentes quousque de infirmitatibus suis convaluerint, acmulieres prægnantes quousque de puerperio surrexerint, necnon ad omnes pueros de eisdem mulieribus genitos, usque septennium, si dictæ mulieres intra hospitale prædictum decesserint."

At the suppression of monasteries in 1537 the Priory and Hospital, and their revenues came into the possession of Henry VIII., who, in 1544, at the petition of Sir Richard Gresham, Lord Mayor of London, and father of Sir Thomas Gresham, refounded the hospital by royal charter, and endowed it with the greater portion of its former revenues, being "moved thereto with great pity for and towards the relief and succour and help of the poor, aged, sick, low, and impotent people . . . . lying and going about begging in the common streets of the city of London and the suburbs of the same," and "infected with divers great and horrible sicknesses and diseases."

At the granting of the charter the hospital contained 100 beds, and its medical staff consisted of a physician and three surgeons, the latter attending daily upon all the patients, and consulting with the physician in cases requiring medical advice.

From this its second foundation, St. Bartholomew's Hospital has increased in 300 years to more than six times its original extent, and the opportunities which, as it increased, it afforded for the study of disease, did not escape the learned and benevolent men who attended on the sick within its walls. They taught while they healed, delivering lectures on the most important subjects of medical and surgical science and practice.

The earliest record of the School of St. Bartholomew's dates from 1662, from which time, encouraged by the Governor's of the Hospital—among whom at the beginning of the eighteenth century were Drs. Radcliffe and Mead. It soon assumed so important a character that in 1724 a new building was provided for a museum of anatomical chirurgical preparations, which was placed under the charge of John Freke, then assistant-surgeon to the hospital, and previously sergeant-surgeon to Queen Anne, and in 1734 leave was granted for any of the assistant-surgeons or surgeons to read lectures on anatomy in the dissecting-room of the hospital.

The progress of science and the extension of medical education in the last thirty years have led to the institution of additional lectureships on subjects auxiliary to medicine and on new and important applications of it, and further facilities have been offered for instruction. Thus, in 1835 and 1854 the anatomical museum was considerably enlarged, new medical and chemical theatres and museums of materia medica and botany were built, and the library, enriched by liberal contributions, was placed in the present reading rooms. The dissecting-rooms were rebuilt in 1865.

In 1866 a new laboratory for the study of practical chemistry was provided for the chemical class, and in the year 1870 a second extensive laboratory was built, with a room specially constructed for the teaching of mechanical and natural philosophy. New wards for patients with diseases of the eye were also completed in the same year.

The clinical practice of the hospital now comprises a service of 710 beds: of these 227 are allotted to the medical cases, 322 to the surgical cases, 26 to diseases of the eye, 20 to the diseases of women, and 81 to the syphilitic; while 34 are at the Convalescent Hospital at Highgate. Children are admitted into both the medical and surgical wards, those under 5 years of age being received into the female wards.

In the year 1872, relief was afforded to 6,012 in-patients, and 132,000 out-patients, besides women attended in their confinements at their own homes.

On referring to the records of the hospital we find that a dentist was first appointed in 1837, it being deemed "advantageous for the better efficiency of the students in the art of extraction of teeth that the appointment should be made," but it was not until 1867 that dental surgery was formed into a special department, and in that year Mr. Alfred Coleman was appointed Dental Surgeon, and Lecturer on Dental Surgery and Pathology to the Hospital; since then it has gradually expanded, and it will be seen by the amount of work done in the year 1873, that it vies with older established dental departments of general hospitals in London.

Mr. Coleman, assisted by two dressers, and such students who may feel desirous to study the art of dental surgery, attends on Fridays from 9 a.m. to 12 p.m., when all patients who may require the assistance of the dental surgeon are seen. A course of lectures are delivered every winter by Mr. Coleman, and both the dental practice and lectures are recognised by the Royal College of Surgeons. The number of cases seen in the year 1873 was 916, of which 632 were extractions, 194 gold and other stoppings, and under the head of miscellaneous were 90, which includes 16 of cleft palate, the remaining number being cases of cancrum oris, necrosis of superior and inferior maxillæ, stomatitis, and irregularities of the teeth. There were also 138 cases of administration of nitrous oxide gas.

In addition to the number of extractions in the Dental Out-patients' Room, there were 3,700 which took place in the Casualty Department of the Hospital.

Teeth extracted, Casualty Department - -	3,700
„ „ Dental Out-patient's Room -	632
Gold, and other stoppings - - - -	194
Miscellaneous Cases - - - - -	90
	4,616

This is the number of Dental cases seen at St. Bartholomew's Hospital during the year 1873, and is about the average for the last four years.

HOSPITAL REPORTS.

DENTAL HOSPITAL OF LONDON, 32 SOHO SQUARE.

The Annual Meeting of the Governors of this Hospital was held on Thursday evening, the 29th January, at 5 o'clock. The chair was taken by R. C. L. Bevan, Esq. Amongst those gentlemen present were Messrs. J. Tomes, C. S. Tomes, E. Saunders, T. Rogers, Milward Harding, E. Sercombe, A. Hill, J. B. Fletcher, A. Coleman, Durlacher, J. Parkinson, G. C. Ash, G. Gregson, T. Underwood, C. J. Fox, W. F. Forsyth, J. R. Mummery, Rev. G. B. Twining, and C. J. Fox, jun.

The following reports of the Managing, Medical, and Building Committees were read:

Report of the Managing Committee, January, 1874.

In presenting their 16th Report to the Governors, the Committee feel the greatest satisfaction in being able to state, upon a careful retrospect of the past year, that in no respect has it diminished in success from the year which preceded it, but, on the contrary, has been marked by steady and certain signs of progress.

The Governors will doubtless remember that at the last Annual General Meeting the erection of a New Hospital in Liecester Square was discussed, and the plan of the Building Committee was adopted.

With a view to carrying this plan into execution, the Building Committee were in February last reappointed, and the carrying out the details of the plan has been left entirely in their hands.

The zeal and energy which they have evinced in discharging the trust reposed in them are shown by the result of their work, and the large sum of money which has been subscribed to the Building Fund by the public.

The Building Committee have presented a Report of their proceedings since their reappointment, to which this Committee would crave the careful attention of the Governors. It will be found annexed to the present Report.

The Governors will be glad to hear that the ordinary history of the Hospital during the last twelve months has been marked by no changes in the permanent staff of medical officers. The Committee, however, regret to say that they lose the service of Mr. Claude Rogers, their most efficient house-surgeon, whose term of office expires in February next. They are now on the point of electing a successor.

In the month of May, owing to the lamented death of Sir William Tite, who had been deeply interested in the welfare of the Hospital since its commencement, the Treasurership became vacant, and Mr. R. C. L. Bevan, a member of the banking firm of Messrs. Barclay, Bevan, and Co., and one of the Vice-Presidents, and a staunch supporter of the Hospital, has since been appointed Treasurer in his place.

The Committee feel that the Governors will agree with them in thinking it a special subject of congratulation that they have obtained such a successor to Sir William Tite. Arrangements are now being made for transferring the Banking Account of the Hospital to Messrs. Barclay, Bevan, and Co., who will in future be the Bankers of the Hospital.

During the past year the names of the Honble. Arthur Kinnaird M.P.; Robert McCalmont, Esq., M.P.; Henry W. Peek, Esq., M.P.; and W. H. Smith, Esq., M.P., have been added to the list of Vice-Presidents.

Among those to whom the Hospital is specially indebted during the past year may be mentioned the names of the Grocers' Company, the Merchant Taylors' Company, and the Mercers' Company, who have respectively given donations of £21; Samuel Cartwright, Esq., and Alfred Coleman, Esq., who have given a joint donation of £50; and the Committee of the Metropolitan Hospital Sunday Fund, who awarded the sum of £38 6s. 8d.

As to the financial position of the Hospital, it will be seen, from the Balance Sheet annexed to this report, that the donations of life Governors during the past year amounted to £217 10s., as against £188 in 1872, £105 in 1871, and £52 10s. in 1870; and that the Annual Subscriptions amounted to £329 15s., as against £323 0s. 6d. in 1872, £265 2s. in 1871, and £227 12s. in 1870. The Committee feel that this increase during the past year, slight though it may be, is most satisfactory, when it is remembered that the amounts do not include any of the special donations to the Building Fund.

The Committee are greatly gratified in observing that the School attached to the Hospital has kept up its high average during the past year, and that the efforts of the Medical Staff and Lecturers are fully appreciated by the increased number of Students.

In addition to the educational advantages which the Students in past years have enjoyed, clinical lectures are now from time to time given by the Medical Staff, as opportunities offer themselves.

The Committee feel it almost unnecessary, after the liberal response which have been recently made to their solicitations, to remind the Governors of the needs of the Hospital. The Committee can only ask for a continuance of that help and support which the Governors have hitherto so gladly given them, and would only bring to their notice the fact that, besides the large increase in the rent of the new Hospital, its current expenses must be very much greater, and continuous and unwonted efforts on the part of all its supporters will be required to maintain it in a proper state of efficiency.

The Committee feel that the Hospital in its new home will have many more opportunities of doing good than it has hitherto had, and they trust that its means may be equal to its opportunities.

The death of the senior Trustee, the late Mr. W. A. Harrison, cannot be passed over by the Committee without one word to testify their appreciation of his services to them and to the Hospital. Connected with it from its commencement—as Trustee, member of Committee, and for some time Medical Officer—to his death, his loss is and will be very much felt. At present the vacant Trusteeship has not been filled up, but Mr. Sercombe has consented to fill the vacant post.

The Committee regret that during the past year they have lost the services of Mr. Blackwell and Mr. Skirrow, who have retired.

In accordance with the present Laws of the Hospital, the following gentlemen retire from the Committee of Management, namely Messrs. Hepburn, C. Rogers, and Walker, and they are not this year eligible for re-election.

The Committee beg to recommend the election of Messrs. Tomes, Wegg, Phillips, King, Barrett, Welch, and Coleman.

In conclusion, the Committee beg to return thanks to the Medical Officers for their zeal in the performance of their duties, which has tended so much to the prosperity of the past year, and to the Auditors for the trouble they have taken in auditing the accounts of the Hospital.

Report of the Medical Committee, January, 1874.

The Committee, whilst on many grounds able to report a continuation of success and progress over former years, must acknowledge to a diminution in the number of patients attended to this year as compared with last year. For this falling off they feel confident they are able to afford a correct explanation. During the past three or four years their accommodation has been so inadequate to their wants that patients have been compelled occasionally to wait hours before it was possible for them to receive attention, and this loss of time, so serious to the industrial classes, has, they have learned from several quarters, deterred patients from applying for relief. If, however, a decrease be shown in the number of patients, they think it could be readily proved that the actual work done has in no repect fallen short of that effected last year; with a full staff of medical officers, a most able House Surgeon, and a larger number of efficient Dressers than they have ever had at their disposal, the Medical Committee are convinced that the Institution has never more thoroughly carried out the object of its founders than during the past year. The character of the work done, especially in fillings of gold and other material—operations which, to be done effectually, necessarily occupy a very large amount of time—will, the Committee are sure, more than favourably compare with that done in any previous year.

Allusion has been made to the increased number of that most important element of the Institution, the Dressers selected from the pupils studying at the Hospital. The general interest taken by these gentlemen in their work, together with a special pride in excelling in excellence of operation, a kindly manner towards the patients, and a general desire to conform in every respect to the wishes of the medical staff, has been so manifest during the past year as to call for special acknowledgment.

The School in connection with the Hospital was never so large or in such a satisfactory condition as at the present time, exceeding in number several of the medical schools attached to the general hospitals; the want of some officer who could more immediately see to its wants and requirements than could the Medical Committee had, the latter felt, been long necessary, and the kind acceptance of the office of Dean by Mr. Thomas A. Rogers will, they are sure, be a great gain directly to the Medical School and indirectly to the Institution.

The Medical Committee cannot part with their House Surgeon, Mr. Claude Rogers, whose term of office expires in February next, without expressing their appreciation of the services that gentleman has rendered to the Hospital during the period he has held the post.

In conclusion, the Medical Committee offer their best thanks to the General Committee for their willingness at all times to second and forward their views in what they deem best for the welfare of the Institution.

The following is the number of patients and operations performed during the year.

Extractions, Children	4447
„ Adults	6068
Under nitrous Oxide...	1618
Gold Stoppings	971
White Foil ditto	1635
Plastic ditto	1354
Irregularities of the Teeth treated surgically and mechanically	1388
Miscellaneous Cases...	3313
Advice Cases...	1110
Total	21,904

Report of the Building Committee, January, 1874.

The Building Committee regret that it is not in their power to announce, as they had hoped to be able to do, the completion of the alterations and repairs in the New Hospital in Leicester Square. While, however, they are unable to commend the business energy of the contractor, they beg to assure the Committee and Governors that the work is being well done, so that it is unlikely that any substantial repairs will be required for many years. Though the brickwork of the larger house (40) was in the main good, that of the smaller house at the west end (41) was by no means in so sound a state, and a considerable portion, especially of the back wall, has had to be taken down and rebuilt. The large operating saloon at the top of the house, affording room for twenty or, if necessary, twenty-five chairs, is finished, as also the two bed rooms on the same floor. The museum, with its extension in the form of a gallery round three sides of the lecture room, is also nearly completed. In both these rooms there will be found abundance of light and means of ventilation. The library is also ready for the bookcases. The large meeting room of the Odontological Society is in a forward state, as are also, on the ground floor, the waiting room, extracting room, and anæsthetic room. The system of hot water pipes for distributing heat throughout the building will shortly be in working order, and the gas is laid on wherever it is likely to be required.

THE DENTAL HOSPITAL OF LONDON.

Financial Statement from 1st *January to* 31st *December*, 1873.

Dr.

	£	s.	d.	£	s.	d.
To Balance, viz.:—						
Bankers...	183	0	5.			
Secretary	6	18	7½	189	19	0½
„ Life Governors' Donations	217	10	0			
„ Annual Subscriptions	329	15	0			
„ Donations (General)	47	18	11			
„ Anæsthetic Fund	2	2	0	597	5	11
„ Metropolitan Hospital Sunday Fund				38	6	8
„ Medical Council for three quarters' Rent to 29th September, 1873	90	0	0			
„ Odontological Society of Great Britain, for four quarters' Rent to Michaelmas, 1873	50	0	0	140	0	0
				£965	11	7½

Cr.

	£	s.	d.	£	s.	d.
By Rent, four quarters to December 31st, less Property Tax				167	13	10
„ Rates and Taxes, viz. :—						
Poor	21	3	6			
General	7	1	2			
House	6	18	0			
Land	10	18	9			
Main Drainage	1	18	6			
Sewer	0	12	10			
Water	4	12	0			
Gas	18	2	11			
Property	3	1	4	74	9	0
„ Medical Staff for Hospital supplies				129	5	7
„ Salaries				120	13	0
„ Coals				19	0	0
„ Printing, Postage, Stationery, &c.				55	7	11
„ Works and Repairs				45	18	4
„ Porters' Wages and Assistance				92	6	0
„ House Expenses				16	16	6
„ Anæsthetic Fund Expenses				31	18	10
„ Law Expenses				1	7	6
„ Balance :—						
Bankers'	200	18	8			
Secretary	9	16	5½	210	15	1½
				£965	11	7½

Examined and found correct by the ledgers and vouchers.

January 14th, 1874

H. ROGERS, } *Auditors.*
G. C. ASH, }

Those who were familiar with the building in its original state may remember that one of the most discouraging features was the dark, low, tortuous staircase; this has been removed and has been replaced by one of satisfactory width and well lighted, of stone up to the first floor, and of wood of equal width to the second and third floors. And your Committee think great credit is due to the architect for the skill and boldness with which he has grappled with the difficulties encountered in carrying out this very essential improvement.

While giving a close attention to every detail by which it may be rendered a perfect and typical Institution of its kind, as far as circumstances would permit, both in a professional and in a sanitary point of view, your Committee have also sought the opinions and suggestions of the Medical Committee and others as to the best form of operating chair, &c. To arrive at a sound and satisfactory conclusion in this matter, on which, as might be expected, there was great diversity and conflict of opinion, it was found necessary to establish a sort of ballot; numbers were affixed to every variety of chair in use at the Hospital, as also to some of new and improved construction, in all, eight varieties, and corresponding numbers on columns of paper were placed in the operating room, on which the operators were, one and all, invited to record their opinions. In this way, as by a process of Darwinian selection, the survival of the fittest was arrived at. Twelve chairs of a pattern the result of this process of elimination are now in course of construction to meet the requirements of the New Hospital.

Your Committee have, on the judgment of the Master of the Rolls being given as to the preservation of the central garden, again renewed their application for the purchase of the freehold, but as yet without success. In the meantime they cannot but congratulate the Governors on having secured a lease of thirty-three years, from Michaelmas, 1872, at the very moderate rent of £220 per annum.

NEW DENTAL HOSPITAL, LEICESTER SQUARE.

To the Editor of the "Monthly Review of Dental Surgery."

Sir,—I have the pleasure to announce the following contributions to the Dental Hospital Building Fund, received since your last issue.

Very faithfully yours,

Edwin Sercombe, *Treasurer.*

41, Brook Street, W.

	£	s.	d.
Amount already received	3,076	10	6
Hon. Arthur Kinnaird, M.P.	50	0	0
Dr. John Henry Martin, Portsmouth	50	0	0
Rev. G. B. Twining (in five annual payments)	25	0	0
Grocers' Company	25	0	0
Thomas Balcombe, Esq., Jersey (in five annual payments)	10	10	0
H. S. Hoare, Esq., Torquay	10	10	0
George Parkinson, Esq., Bath	10	10	0
Henry Rogers, Esq., per Milward Harding, Esq.	10	10	0
John Simon, Esq., F.R.S., per E. Saunders, Esq.	10	10	0
A. B. Spence, Esq., per George Gregson, Esq.	10	10	0
E. Denison, Esq., per J. R. Mummery, Esq.	10	10	0

Arthur G. Levason, Esq., Hereford,* in five annual payments (omitted by mistake in the Dec. issue)	10	10	0
Henry Campion, Esq., Manchester	5	5	0
Mrs. Durlacher	5	5	0
W. A. Hunt, Esq., Yeovil	5	5	0
A Friend	5	0	0
Francis Powell, Esq., M.P., per Milward Harding, Esq.	5	0	0
Mrs. William Thomas, per Henry Rogers, Esq.	5	0	0
Wm. H Cooper, Esq.	5	0	0
J. A. Smith, Esq., Chelsea	4	4	0
W. Grant, Esq., Inverness, N.B.	3	3	0
G. Weaver, Esq., Upper Baker Street	2	2	0
Wm. Moris, Esq., per Milward Harding, Esq.	2	2	0
F. A. Burrows, Esq., per T. A. Rogers, Esq.,	1	1	0
— Hazell, Esq., per J. A. Smith, Esq.	1	1	0
Mrs. Lafone, per E. Saunders, Esq.	1	1	0
A Friend, per ditto	1	1	0
Total	£3,362	0	6

THE NEW DENTAL HOSPITAL.

INAUGURAL DINNER.

THE Managing Committee of the Dental Hospital of London, in conjunction with the President and Council of the Odontological Society of Great Britain, and the Officers of the London School of Dental Surgery, purpose removing to their new premises in Leicester Square on Thursday, the 12th of March next.

The subscribers, members, and friends of these institutions are invited to join in commemorating the event by a dinner at Willis's Rooms, King Street, St. James's, at seven p.m. on that day. (Being strictly a social gathering, no appeal for pecuniary aid to the Hospital will be made.)

Dinner Committee. — James Parkinson, W. F. Forsyth, Charles S. Tomes; Charles James Fox, Honorary Secretary.

First List of Stewards.—W. Ash, Esq.; G. H. Baily, Esq.; W. G. Bennett, Esq.; F. W. Braine, Esq.; J. T. Clover, Esq.; A. Coleman, Esq.; Oakley Coles, Esq.; J. Dennant, Esq,; M. Durlacher, Esq.; C. J. Fox, Esq.; W. F. Forsyth, Esq.; J. Fairbank, Esq.; J. B. Fletcher, Esq.; R. Hepburn, Esq.; T. H. Harding, Esq.; M. Harding, Esq.; T. Hankins, Esq.; T. H. Hills, Esq.; I. J. Lyons, Esq.; H. Moon, Esq.; J. R. Mummery, Esq.; J. H. Mummery, Esq.; J. O'Duffy, Esq.; J. Parkinson, Esq.; G. T. Parkinson, Esq.; T. G. Palmer, Esq.;

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* We did not receive this gentleman's name for our December issue.

F. Petty, Esq.; T. A. Rogers, Esq.; E. Saunders, Esq.; I. Sheffield, Esq, ; E. Sercombe, Esq. ; H. Sewill, Esq. ; J. S. Turner, Esq. ; J. Tomes, Esq., F.R.S. ; C. S. Tomes, Esq. ; C. Vasey, Esq. ; F. J. Vanderpant, Esq. ; W. H. Woodhouse, Esq. ; E. J. Winterbottom, Esq. ; F. Weiss, Esq.

All communications are requested to be directed to the Honorary Secretary, Mr. Fox, at 27 Mortimer Street, W.

DENTAL HOSPITAL OF LONDON.

CASES TREATED FROM JAN. 1st TO 31st, 1874.

Extractions : Children under 14	468
Adults	383
Under nitrous oxide	148
Gold stoppings	89
White foil ditto	60
Plastic ditto	127
Irregularities of the teeth treated surgically and mechanically	29
Miscellaneous cases	202
Advice cases	36
Total	1,542

CLAUDE ROGERS, *House-Surgeon.*

REPORTS OF SOCIETIES.

MEDICAL SOCIETY OF LONDON.

DR. S. O. HABERSHON, F.R.C.P., PRESIDENT, IN THE CHAIR.

Mr. GANT brought forward the case of a young woman, aged twenty-nine, from whom he had excised the antrum of the upper jaw for a cystic growth. About eight years ago she felt a small lump about the size of a Spanish nut high up in the left cheek; this increased in size, and she suffered from neuralgic pains in the face. When admitted into the Royal Free Hospital, the tumour presented a double swelling, partly in the cheek and partly under the lip, projecting down to the teeth. Mr. Gant then diagnosed the cystic growth in and protruding from the antrum. He made an incision from the nasal process of the jaw downwards, and carried it around the ala of the nose and through the middle line of the lip. The cheek was then readily reflected, and the tumour exposed. He then removed the whole of the antrum with cutting-pliers from the second incision to the last molar tooth, leaving the infraorbital nerve above untouched. The incision was accurately closed with hair-lip pins. These were withdrawn on the 5th day, primary union having taken place. The patient was shown to the Society, and now, two months after the operation, can speak distinctly and eat without inconvenience, and the face presents no disfigurement. The tumour, when removed, was apparently a fibro-cystic growth.

Mr. SEWILL said most of the cysts were of dentigerous origin. He exhibited some models illustrating the pathology of the cases Removal of the offending teeth was often sufficient for the cure of these maladies.

Mr. BRYANT criticised the operation as being more serious than the disease required. He thought these cysts should be opened beneath the cheek, whether of simple or of dentigerous origin.

Mr. BRUDENELL CARTER asked whether Mr. Gant had heard of the operation lately performed by Mr. Warrington Haward, which consisted of completely raising the whole face, which enabled the operator to remove necrosed bone from the nasal fossæ with the greatest facility.

Mr. GANT, replying, said the cyst was not dentigerous. With reference to Mr. Bryant's remarks, he would say that the disease was more a cystic growth than a cyst. He had repeatedly punctured cysts, but in this case he thought the removal of the bone itself was called for.

Mr. BRYANT, after this, qualified his remarks.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

EXAMINATION FOR DIPLOMA IN DENTAL SURGERY.

JANUARY 26, 1874.—2 TO 4 O'CLOCK, P.M.

Anatomy and Physiology.

1. Describe the connections of the superior maxillary bone, and the arrangement of the mucous membrane covering the lateral wall of the nostril.

2. Describe the distribution of the nerves concerned in the sense of taste.

Pathology and Surgery.

1. What is cancrum oris? at what age and under what circumstances does this disease usually occur? and how would you treat it?

2. Describe the nature, diagnosis, and treatment of ranula?

N·B.—The Candidate is required to answer at least one of the two questions both on Anatomy and Physiology, and on Pathology and Surgery.

Dental Anatomy and Physiology.

1. Describe fully the structure of osteo-dentine in the human subject, and its mode of development.

2. Describe the ground of an incisor tooth, and the method of increase of its several tissues.

3. Describe the processes of an odontoblast, and the parts which they respectively fulfil in the formation of dentine.

Dental Surgery and Pathology.

1. What are the cases of oral disease or lesion, whether in connection with the teeth, gums, and alveoli, in which the following drugs may be useful:—Carbolic acid, sulphuric acid, tannic acid, morphia, arsenic, spirits of wine, matico, perchloride of iron, and chlorate of potash?

2. What is meant by necrosis of a tooth? State its causes and treatment.

3. In what conditions of the pulp is it advisable to employ other than gold fillings in stopping the cavity of a carious tooth?

N.B.—The Candidate is required to answer at least two out of the three questions both on Dental Anatomy and Physiology and on Dental Surgery.

The following are the names of those gentlemen who passed the above examination and the final one on January 30th, 1874:

THOS. FRAS. KEN UNDERWOOD, M.R.C.S., Gower St.
GOODMAN LAWRENCE BELLABY, Nottingham.
RICHARD HENRY GELDARD, St, Austell, Cornwall.

CASE OF REAL DISTRESS.

To the Editor of the "Monthly Review of Dental Surgery."

DEAR SIR,—During the past month I have received the following subscriptions on behalf of Mrs. Cox Smith:—

	£	s.	d.
Alf. de Rothschild, Esq.	3	0	0
T. Ridpath, Esq.	2	2	0
J. Evans, Esq.	2	2	0
Coles and Backwill, Esqs.	1	1	0
F. Woodhouse Braine, Esq.	1	1	0
J. L. Ritson, Esq.	1	1	0

You will be glad to hear that what we have already done has been of great service to Mrs. Cox Smith; at the same time I should like to raise at least another £50, so as to relieve her from all fear of being obliged to give up her home before she has had time to establish a school. She has commenced this term with three pupils, and hopes of getting more.—Believe me, dear Sir,

Yours faithfully, E. M. RIDPATH.

LEICESTER SQUARE.

IN common with all Londoners, we appreciate fully the munificent liberality of Mr. Albert Grant in rescuing Leicester Square from its present disgraceful condition, and making it at once an ornament and a healthy pleasure-ground for the neighbourhood. At the risk, however, of appearing to look a gift horse in the mouth, we must enter our protest against the selection of worthies whose features are to be commemorated by busts placed in the ornamental garden of the future. Hogarth, Sir Joshua Reynolds, and Sir Isaac Newton all lived in Leicester Square, and may fairly claim to be represented; but we are surprised that Mr. Grant should have been obliged, as it appears, to include Dr. Johnson simply as "the friend and constant visitor of Sir Joshua Reynolds," when John Hunter —a man no less eminent, though perhaps less popularly known— may claim not merely as a resident for a long time in the square, but as having founded there the magnificent museum now in the College of Surgeons of England, with which his name will always be connected. Hunter moved from Jermyn Street to Leicester Square in 1783, where he purchased the lease of some premises on the east side of the square, consisting of a dwelling-house with a large piece of ground extending back to Castle Street, where there was a second smaller dwelling. Between the two houses he built his museum, at a cost of not less than £3000, and it was completed and ocupied in 1785. John Hunter died on October 16th, 1793, at St. George's Hospital, and his body was conveyed in a sedan-chair to his house in Leicester Square, and subsequently buried in the vaults of St. Martin's-in-the-Fields, whence it was removed a few years back to Westminster Abbey. Sir Charles Bell, too, a name held in the highest honour in the profession as well as out of it, and to whom the greatest physiological discovery of two centuries is due, has been overlooked. Bell lived during the early part of his career in Leicester Street, where he accomplished some of his most importaut scientific works. Eminent in art, and pre-eminent in science, he has the strongest claims for a place in the memories of the people.—*Lancet.*

To Correspondents.

TWO SHILLINGS per copy will be given for the August (1872) Number of the MONTHLY REVIEW OF DENTAL SURGERY, if sent to Mr. George Butcher, 4, Crane Court, Fleet Street, E.C.

ALL communications intended for the Editor should be addressed to the care of Messrs. SMITH, ELDER, & Co., 15 Waterloo Place, Pall Mall.

All inquiries respecting Advertisements and Subscriptions should be sent to Mr. GEORGE BUTCHER, 4, Crane Court, Fleet Street, E.C.

THE MONTHLY REVIEW

OF

DENTAL SURGERY.

No. X. MARCH, 1874. Vol. II.

MARCH, 1874.

In all future records of Dental progress in England, "March 1874," will assuredly stand out as a time when a great advance was made towards improving the social and educational position of Dental Surgeons. The New Dental Hospital has been opened under the most favourable auspices, and the inaugural dinner on Thursday last brought together a larger assembly, we believe, of representative men, than have ever been united for one common cause in the Dental Profession.

On both occasions we received the hearty support of our Medical brethren, and the Press have not been backward in recognising the advances that have been made. The Odontological Society has been fortunate in the choice of its President, and the Dental Hospital has been equally favoured in having officers (at the present time, especially) possessed of so much discretion and enterprise. Under such excellent conditions it is hardly a matter of surprise that the events of the last few weeks have passed off so successfully.

The present time is, in fact, an important era in the history of our Profession; and coming, as we have done, so prominently before the general public, it behoves us on all sides to exercise the most jealous care in maintaining in the highest degree that true professional feeling and capacity that (by our recent actions) we have indirectly shown we possess.

DENTISTRY.

Such was the title of an article which appeared in the *Saturday Review*, some six weeks ago, which must have caused more or less unpleasant feelings in the mind of every dentist who chanced to read it, and of which the *raison d'être* is hard to discern. The function of the public press is to instruct, to amuse, and by giving publicity to abuses, to bring about their amendment; but the article in question, to our mind, fulfils none of these objects. Instruct it cannot, for its author gives repeated proofs that he has taken no trouble to inform himself upon his subject, of which he is more ignorant than the average public; and, although there are persons to be found who derive intense amusement from witticisms which contain little or nothing of the ring of true wit, as for example, a so-called comic song, yet there can be few such among the habitual readers of a journal taking so high a literary stand as the *Saturday Review*. Abandoning, then, as untenable, the supposition that it was justified by being either amusing or instructive (though, of course, it is not for us to say what the author's intention may have been), does its pass strictures upon any abuses that need reforming? One might have expected that the *Saturday Review* would have been aware of the existence of such a thing as Dental Education, and would not have confounded the profession properly so-called with those who exhibit show cases; it is bad enough, that the writer of an article on Dentistry should be totally unaware of such a fundamental fact as this, but what can be said of him, when he gravely supposes that an advertising dentist's show-case would "be in place in a scientific museum"!

And yet we are grateful to him for giving so conclusive a proof of his complete ignorance of a subject on which he presumes to write, for it relieves us from the tiresome necessity of seriously criticising any part of the article.

But though we have done with the writer, we have yet a complaint to make against the journal for publishing the article; thus we are told that people dread to meet their dentist in the street, and that after a visit to him, they go away with an abiding horror of him personally. Now, if this were strictly true, which we venture to dispute, it still would not be worth while to say anything so exceedingly disagreeable, unless to serve some very distinctly useful end, which in this instance does not exist. Elsewhere the article is good enough to admit that dentists are the same flesh and blood as other men; might not this brotherly feeling have been carried far enough to have expunged passages which every dentist must feel to be offensive.

What has the Profession done to deserve these derisive comments? The text which seems to have suggested the article is, that the writer has "read with pleasure in the *Medico-Chirurgical Review*, that during the last ten years no branch of surgery has made so much progress as dentistry has done." Surely the sermon is strangely at variance with the text.

Most inopportune, too, is this present time for such comments, for now, of all times, the Dental Profession has fairly earned a right to expect encouragement and a helping hand Fifteen years ago, no organised scheme of dental education existed, no hospital was to be found at which a student could learn more than the roughest operations of dental surgery, no society for discussions and the advancement of our special knowledge; and, indeed, dentists were hardly known to one another, save by an abortive attempt to bring about union through a series of dinners, a scheme which completely collapsed in the year 1843.

Within this short period, an immense deal, we were almost saying everything, has been effected; a school of dental surgery has been established, at which nearly fifty students are at present being educated; qualified practitioners, who have been examined by a perfectly independent body of the highest status, namely, the Royal College of Surgeons, are to be found in every part of the country; a society has been established with a valuable museum and library, whose transactions go forth to all parts of the globe; and journals have been set on foot which enjoy a well-deserved popularity, by no means confined to this country.

Still, there remain a very large number of unqualified, self-styled dentists, of whom we are ashamed, but with whom we have as yet no means of dealing. To purge the profession of these will take time, and will need the co-operation of the public, as well as of the medical profession; and it is just on this account that an article, such as that of which we are now complaining, is mischievous.

The general public have as yet far too little appreciation of the amount of study and ability required to make a really good dentist: they are inclined to think that one dentist is much as another, and that the calling is one so purely mechanical that they esteem it lightly; while there are too few who even know the distinction between a qualified and an unqualified dentist. But it is too bad that an influential journal, of which better things might be expected, should foster these ideas; a profession which is sparing neither trouble, time, nor money to elevate itself, and take the stand which the acquirements of educated dental surgeons entitle them to, deserves and has earned the right to sympathy and help, not discouragement.

Of late the material progress of our body has been all that could be desired: the students entering it year by year display better abilities and better mental culture, and this must tell in the long run on the position it holds in the eyes of the general public.

And so lately as Thursday last, upwards of 176 gentlemen, many of them from distant parts of the country, met together to celebrate by a dinner the removal of our hospital and Odontological Society into its new premises in Leicester Square. It was felt to be an era in the history of the Profession; the foundation of the hospital, in its old cramped premises, was more or less of an experiment; now it had succeeded, it had stood the test of time, and in its steady, uninterrupted progress, had outgrown its former proportions. To celebrate, then, this manifestation of the success and prosperity of the movement in favour of Dental Education, a friendly dinner was proposed; instead of the fifty or sixty who were expected by its promoters, one hundred and seventy-six came; a convincing proof, if one were needed, of the earnest co-operation of the profession in the work of progress.

Such is the time selected by a writer. whose fatal facility for writing has led him beyond the limits of his knowledge, to cast a stone at the Dental Profession.

MIDDLESEX HOSPITAL.

We regret to hear of the resignation by Mr. Tomes of the office of Dental Surgeon to the Middlesex Hospital. The Hospital will, however, retain his services as Consulting Dental Surgeon.

Mr. J. S. Turner will, we believe, be promoted from the Assistant Dental Surgeoncy, which he has held for the last ten years, to the full Dental Surgeoncy, rendered vacant by Mr. Tomes' resignation.

DR. BARNUM'S RUBBER DAM.

We were glad to find Mr. Sercombe, in his inaugural address, calling attention to the claims of Dr. Barnum upon the Profession in this country for his valuable invention of the Rubber Dam. We brought the matter under the notice of the readers of this Journal some months ago, and we shall be very glad if Mr. Sercombe signalises his year of office by obtaining from the Dental Surgeons of Great Britain some tangible evidence of their appreciation of Dr. Barnum's invention.

DENTAL HOSPITAL OF LONDON.

A concert in aid of the funds of this institution, will be given on Wednesday evening, March 25, 1874, by the May Fair Minstrels, in the Lecture Theatre of the institution. An attractive programme is in preparation, and it is hoped that a large and much needed contribution towards the outlay incurred in the adaptation of the new building will result. As only a limited number of seats are at the disposal of the Committee, early application is requested. Address—"The Secretary, The Concert Committee, Dental Hospital, 40, Leicester Square, W.C."

ON THE
MICROSCOPICAL STRUCTURE OF FOSSIL TEETH FROM THE NORTHUMBERLAND TRUE COAL MEASURES.

By W. J. BARKAS, M.R.C.S.E., L.R.C.P., London.

(*Continued from page* 393.)

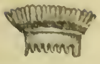
CLADODUS (*continued*).

The microscopical structure of the teeth of Cladodus bears a close resemblance to that of the teeth of Hybodus. The base of the tooth, and the whole of the interior of the pulp cavities of the denticles are composed of osteo-dentine, and over the whole of the exposed surface of the tooth is a continuous layer of unvascular dentine, with a similar layer of enamel overlying it. The vascular canals of the osteo-dentine have a similar arrangement to those of Hybodus, whether from the Wealden or from the Coal Measures; they differ however, in size from the canals in the Carboniferous Hybodi in being larger, though they are not so large as the vascular canals in the Wealden Hybodi. From the canals spring numerous calcigerous tubules, which agree with the tubules in the osteo-dentine of Coal Measure Hybodi with regard to their size, branching, anastomosing, and course; but in Cladodus they are much more numerous, quite as numerous as in the Hybodi from more recent formations. The calcigerous tubules of the unvascular dentine in this tooth are similar in every respect to the tubules of the unvascular dentine of a tooth of Hybodus from the Coal Measures. The layer of enamel is one-two-hundred-and-fiftieth of an inch in breadth, and has the same structure as the enamel in Hybodus.

It will be seen from the above comparisons that the structure of the teeth of Cladodus agrees in most particulars with that of the teeth of Hybodus obtained from the Coal Measures, the only differences being that in the osteo-dentine of the former tooth, the canals are larger, and the calcigerous tubules more numerous than in the osteo-dentine of the latter, but in these respects the tooth does not differ, but coincides with the teeth of Hybodus from the Wealden.

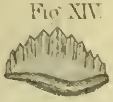
Agassiz, in describing Cladodus, compares its structure with that of Hybodus from the more recent formations, and remarks that the structure of the former differs only from that of the latter in having larger medullary canals, which branch less, and larger calcigerous tubules, which branch much, and are very short. In the sections I have had purposely made for

Fig XIII



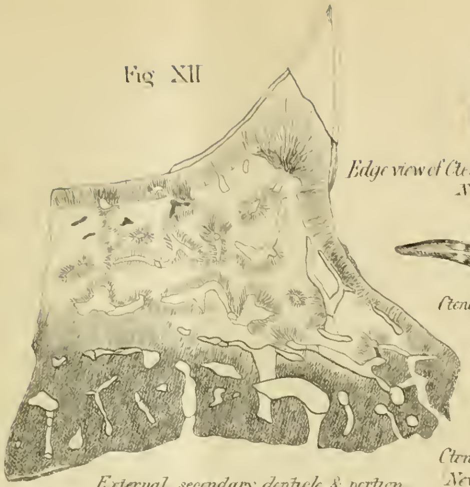
Ctenoptychius pectinatus
Nat Size

Fig XIV



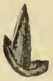
Internal surface of
Ctenoptychius apicalis
Nat Size

Fig XII



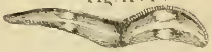
External secondary denticle & portion
of base of tooth of Cladodus, Magnified 20 diameters

Fig XV



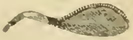
Edge view of Ctenoptychius apicalis
Nat Size

Fig XVI



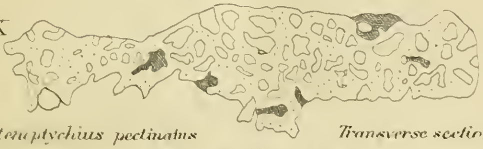
Ctenoptychius unilateralis
Nat Size

Fig XVII



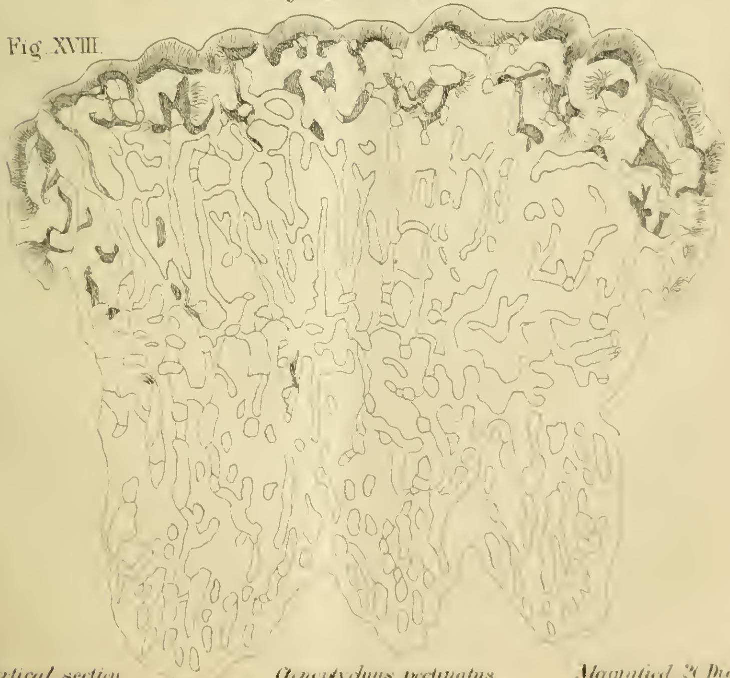
Ctenoptychius unilateralis
New variety Nat Size.

Fig. XIX



Ctenoptychius pectinatus *Transverse section through base*
Magnified 20 Diameters

Fig. XVIII.



Vertical section *Ctenoptychius pectinatus* *Magnified 20 Diameters*

[illegible]

comparison, I cannot detect these marked differences, though there is, as I have said, some difference between Cladodus and Hybodus from the Coal Measures.

CTENOPTYCHIUS.

Ctenoptychius belongs to the sub-family of Cestraciontidæ. The teeth of this sub-family are chiefly characterised by their form, which is better adapted for crushing food than for penetrating and lacerating it, as is the case in the Hybodonts. That their food consisted of testaceous and crustaceous invertebrate animals, which would require crushing before deglutition, may be safely inferred, for such is, according to Professor Owen, probably the principal food of the Port Jackson shark, and the teeth of extinct Cestracionts are often found buried in, or in close proximity to, coprolites, in which are found the remains of these animals. The only representative of this sub-family of cartilaginous fishes to be found in our seas at the present time is the genus Cestracion, of which there are two or three species, one species being the Port Jackson shark mentioned above (Cestracion Phillippi), which exists in the Australian seas, and it is from the characters exhibited by the teeth of this existing fish that palæontologists have been enabled to decipher many of the Selachian fossil teeth that have been found in the Coal Measures; and other formations. In fact, without this key these fossils would have in all probability been still a mystery. The teeth in many of the genera of this sub-family vary much in size and form, even in the same fish, according to their position in the mouth; this is exemplified in the Port Jackson shark, and was well shown in the case of the extinct genus Strophodus. Up to the year 1869 a great variety of teeth of this genus had been discovered, all possessing somewhat different characters, but generally resembling each other. These teeth were found singly, never in a jaw, nor in any number upon the same slab; each variety was, therefore, considered to be a separate species, and named accordingly. In the above year there appeared in the *Geological Magazine* a description and drawing of a jaw containing the teeth of Strophodus *in situ,* and it was observed that these teeth varied very much from each other, and that two of the so-called different species were only the teeth of one fish, situated in different parts of the mouth.

Ctenoptychius is founded upon its teeth, which alone have been discovered, and was established by Agassiz. There are five well-defined species in our Measures—viz., C. pectinatus,

C. denticulatus, C. apicalis, C. unilateralis, and a new variety that I have not yet named. I shall first describe the external characteristics of the two former teeth, and then the characteristics of their minute structure, which is the same in these two varieties. The three latter varieties I shall describe separately, for they differ both in their external and internal characters from the first two.

C. pectinatus is the most common form of this genus discovered in these Measures, and is perhaps one of the most common of all fossil selachian teeth. Fig. XIII. is a typical specimen of this variety. Professor Owen, in his "Dental Characters of Fishes," has described and figured this tooth under the name of Ageolodus diadema, but the name given to this variety by Agassiz, between twenty and thirty years ago, has of course the precedence. The tooth varies in size very much, the smallest in my possession being three-twentieths of an inch high, and one-tenth of an inch wide, the largest three-tenths of an inch high, and two-fifths of an inch wide; it is very much compressed laterally, the breadth of the tooth from which the transverse section (Fig. XVIII.) was made is only seven-twentieths of an inch. The tooth is divided into two distinct parts, a base and a crown, by a constriction extending round the whole of the tooth. The base has a dull unenamelled appearance, and is rather rough: it is inserted into the jaw probably in such a position that the denticles run antero-posteriorly; it is not so wide as the crown, but is greater in length; from the lower margin a few processes are given off which vary in number from two to six, according to the width of the tooth; the two most external processes are generally longer than the others; both the inner and outer surfaces are concave from above downwards for the upper third and convex for the lower two-thirds. The crown has a shining enamelled appearance, more especially on its external surface, but I cannot detect any enamel in the numerous sections of these teeth that I have examined under the microscope; the superior margin is more or less arched from before backwards, and is sharply and deeply serrated; the number of serrations vary from eight to eighteen, according to the size of the tooth, and cause a corresponding number of denticles; these denticles are rather obtusely pointed, and differ in height according to the depth of the serrations. The inferior border is generally straight. The superior portion of the crown is wider than the inferior; this is caused by the denticles diverging from the centre as they proceed upwards, which gives the whole crown a fan-like appearance. The external surface is very convex from above downwards, and slightly so from side to side; it is ridged for about one-third of its upper portion, the lower two-thirds being perfectly smooth. The inner surface is concave from above downwards, and is ridged on its upper half or two-thirds, the remainder of the surface is smooth. The concavity of the inner and the convexity of the outer surface are due to the whole of the crown being recurved inwards. This easily explains how it is that in some sections the denticles are comparatively large, while in others, they are hardly to be observed above the ordinary margin of the crown, as in Fig. XVII.

C. denticulatus differs very little from the above species. It is wider, but is about the same height; the average size of the specimens in my cabinet being three-twentieths of an inch high, and seven-twentieths of an inch wide. The base presents similar characters to that of C. pectinatus, but being wider, there are more processes prolonged from its lower margin; in some few cases there are not any, that margin being quite straight. The crown contains from twenty to thirty denticles, which do not diverge from the centre, and give the crown a fan-like contour, but are perfectly upright; they are, however, irregular in height, giving the superior margin an uneven outline, though nearly straight. The denticles vary in width, and are not so detached from each other as in C. pectinatus; the superior margin is therefore not so deeply serrated as in the latter variety. So far as our present knowledge extends with regard to the above two teeth, we are bound to consider them as two distinct species; but I should not be surprised if some future discovery proved that they are teeth belonging to one and the same fish, though situated in different parts of the mouth.

Osteo-dentine composes the principal portion of the crown and the whole of the base of these teeth; it is permeated freely with large vascular canals, which branch and anastomose very much in the lower part of the base and in the processes prolonged from it, rendering the definition of their course very difficult; about the centre of the body of the tooth they show a distinct tendency to run parallel to its vertical axis and to each other; close to the denticular surface they are quite parallel, and have decreased greatly in size, though they are still large when compared with the canals in the osteo-dentine of Hybodont teeth. These vascular canals are open at the inferior margin of the base of the teeth, showing that they have been at one time continuous with similar canals in the cartilaginous jaw in which the tooth was inserted; the other extremities of the canals anastomose with each other at the base of the denticles and form loops, though not a continuous sinus, as we saw was the case in the Hybodont teeth; from the superior border of these loops spring the calcigerous tubules which pass into the unvascular dentine of the crown. The canals are irregular in their diameter, for they are dilated wherever a branch is given off or an anastomosis takes place, between these junctions the canals are perfectly uniform. Figs. XVII. and XVIII. exhibit very clearly the course and size of the canals, the latter figure being a transverse section through the base near its junction with the crown. From all the canals arise calcigerous tubules. Agassiz states that they are not calcigerous, but dendritic. They may be dendritic, for that only signifies tree-like; but if the tubules in the osteo-dentine of the teeth of Hybodonts are calcigerous, as he grants to be the case, then the tubules in these teeth are also calcigérous, for they only differ in size. In the lower portion of the base these tubules are very few and far between, but they become more numerous as the canals approach the denticular surface. In that portion of the base where the tubules are very scarce they are also very fine, requiring in my sections a power of eighty diameters to resolve the largest, which are about one-ten-thousandth of an inch in diameter. Those in the upper portion are large, measuring on an average one-four-thousandth of an inch; they are everywhere very short, branch dichotomously twice or thrice, and anastomose with the neighbouring branches. Agassiz, referring to the tissue situated between the canals in the base of the tooth, describes it as being perfectly homogeneous, and permeated with dendritic tubules in the upper portion only, and then exceedingly rarely. This description I have shown to be wrong with regard to the nature of the tubules and to their want or scarcity, though Figs. XVII. and XVIII. would lead one to infer that Agassiz was right; but I can cause any of my sections of these teeth to be tubuleless by making them very thin. I have found that the tubules are easily ground away on account of their large size, so that to see them, one must not rub down the section beyond commencing transparency. The tissue itself is perfectly homogeneous in all my specimens, though in Fig. XVIII. it does not appear to be so; the granular appearance which is there observed is caused by numerous small vascular canals filled with dark fossilized matter being cut across transversely; this can only be satisfactorily determined under a power of four hundred diameters.

Unvascular dentine enters to a very small extent into the composition of these teeth; it extends in a thin layer over the whole denticular surface, and down the borders of the crown as far as its junction with the base. The denticles are composed wholly of this tissue, and have no true pulp cavities, the extremities of the medullary canals at their base answering that purpose. Calcigerous tubules, springing from the vascular canals of the osteo-dentine, enter freely into the unvascular dentine, and proceed to its extreme margin; under a power of eighty diameters the external border of this layer appears to be perfectly structureless for about one-three-hundredth of an inch; a power of two hundred diameters shows that the tubules are continued into it. There is no distinct line between these tissues, they gradually pass into each other. The tubules are very large at their origin, varying from one-thousandth to one-four-thousandth of an inch in diameter. They soon divide, but the branches remain rather large, measuring from one-seven-thousandth to one-ten-thousandth of an inch, till they reach the "dentinal enamel," when they become very fine; their course is parallel to the vertical axis of the tooth; they tend to a fasciculate arrangement, which is more especially observed in those passing up the denticles. There is not a trace of enamel in any of the sections of these teeth that I have examined, as mentioned by Agassiz and others; the glistening enamelled appearance of the crown is evidently due to the layer of dense unvascular dentine or "dentinal enamel."

Ctenoptychius apicalis (Fig. XIV.) is exceedingly rare in these Measures, the only tooth I am acquainted with being in my own possession. The engraving represents a tooth from the Staffordshire Coal Measures: it is larger than my specimen though exactly similar in form. (*a*) This tooth differs from the above two species both in its external and internal characteristics, but it was classified and named by Agassiz the founder of the genus Ctenoptychius. Messrs. Werthen and Newberry in the second volume of the "Geological Survey of Illinois," however, strongly object, from an examination of its external characters, to its being classified in this genus; they consider, and McCoy agrees with them, that it is more closely allied to Petalodus, but it also resembles in some particulars, Chomatodus and Orodus. (*b*) The question of its identity can be

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(*a*) All the fossils I have examined from the Staffordshire Coal Measures are from the splendid collection of Mr. Ward, of Longton.

(*b*) Through the kindness of Mr. Ward I have just had the opportunity of examining half-a-dozen specimens of this variety of Ctenoptychius from the Coal Measures of his district. One of the specimens is completely freed most easily settled by microscopical examination; this I have done, and I can most positively say that the minute structure; is distinctly different from that of C. pectinatus and C. denticulatus. There is therefore good ground for doubting the desirability of maintaining its present classification.

The specimen I possess from these Measures is very small, one-fifth of an inch high and three-tenths wide. The crown of these teeth is longer than the base, is not so wide, and is much thinner; it gradually tapers to a point near the central axis. The inner surface has a concave appearance, but it is not really so, the apparent concavity being caused by the abrupt edge of the base, which projects considerably beyond the root of the crown; the concave superior surface of the base also tends to give this appearance; it is longitudinally ridged, each denticle being finely striated, and is separated from its neighbour by a deep furrow; these grooves extend about half-way down the crown, the remainder of the surface being smooth; the whole of the inner surface is minutely pitted, as if the medullary canals opened on the external surface. The outer surface is similar to the internal; the lower smooth portion is, however, not seen, on account of the base of the tooth being prolonged and curved over it. The superior margin is sharp and cutting; it is denticulated, the denticles being vertical and rather acutely pointed; the centre denticle is the largest and highest; those on each side of it gradually become smaller as they proceed outwards, the most external being hardly raised above the border of the bace; the number of denticles vary according to the size of the tooth, my specimen from the Northumberland Coal Measures having seven. The inferior border is convex, to fit into the concavity of the superior surface of the base. The crown has not that enamelled appearance observed in the first two varieties.

The base is a rather thin plate situated nearly at right angles to the crown; it is wider than the crown antero-posteriorly, but laterally its width is equal to the height of the crown. The superior surface is concave from before back-

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from shale, so that both the internal and external surfaces can be examined. The engraving given by Agassiz of the only specimen he had ever seen before he published his "Poissons Fossiles," exhibits the internal surface (the external being buried in the shale) very accurately, and his description of it is also perfect, and I think that the characters observed on the internal surface quite justified him in classifying it as a species of Ctenoptychius. An examination of the external surface and of its minute structure has, however, completely changed my opinion as to its being a species of that genus.

wards and from side to side, the latter concavity being the more marked, for the external margin is higher and more curved than the internal; the inferior surface is convex, has a glistening appearance, is finely pitted, and has four or five vertical ridges; the internal margin is thicker than the external; neither of these borders show any trace of serrations. Fig. XV. shows the position of the base with regard to the crown, and also its general form. I shall refer to the microscopical structure of Ctenoptychius apicalis, Ctenoptychius unilateralis, and the new enamelled species in my next paper.

ODONTOMES.

(Traite des Tumeurs. Par Paul Broca).

ODONTOMES GENERALLY.

(*Continued from page* 402).

Diagnosis.—It will perhaps appear premature to treat here of the diagnosis of odontomes, because up to the present time the nature of these tumours has never been precisely determined upon the living. But the character which distinguishes certain varieties has been proved many times by surgeons — for example, we can profit by the observations of Dupuytren, who recognised in some, the distinctive features of our embryoplastic odontomes, named by him *fibrous encysted bodies* of the jaws. The notions that we shall expose are not entirely theoretical. They are derived from a certain number of clinical facts which exist in science under different titles, and which we can to-day, after the description of all points, consider with certainty as cases of odontomes. They have not, doubtless, the worth of the rules of diagnosis which have received frequently the sanction of practice, but we hope at least that they may be utilised in the future.

We have already several times indicated the principal elements of this diagnosis. We shall now speak of that epoch in life when the tumour first appears. A maxillary tumour, whose formation is evidently subsequent to the end of the second dentition, or only at the epoch when the evolution of the teeth in the affected region is achieved, has scarcely any chance of being an odontome. We would even say has none, if we did not know that supernumerary germs can be developed in the jaws even at an adult age, but this chance is so very slight that it may be almost put on one side. The idea of an odontome may then be rejected as improbable when the tumour shall have appeared after the epoch of dentition.

At this stage of the diagnosis we shall examine successively a case where the tumour remains more or less included in the thickness of the jaw, and that where a gradual eruption, not accompanied with suppuration, brings to light upon the dental arch a considerable portion of the affected tooth.

In the first case the diagnosis is principally rational; in the second case, on the contrary, the direct inspection of the dental mass which projects in the mouth furnishes appreciable signs which are sometimes decisive.

All the dentified odontomes may slowly pierce the gum and effect an eruption more or less comparable to a normal tooth. This circumstance is only exceptionally presented by odontoplastic odontomes, whilst it is much more frequent in diffuse coronary odontomes, and rather constant in circumscribed coronary odontomes and radicular odontomes. Circumscribed coronary odontomes may be recognised by simple inspection of the crown, which holds its order and place and which is regularly formed, so that it supports on one of its sides a small irregular warty dental mass. This little vegetation, when it is retained near the neck, may be confounded with an accumulation of tartar, but it is sufficient to clean and clear the tooth a little to make the diagnosis evident. The radicular odontomes, whose crowns are erupted, are characterised by the existence of a regular and very hard tumour, situated in the thickness of the alveolar border immediately below a well formed molar tooth —an indolent tumour which existed before the eruption of this tooth, and which, since eruption has not increased. They may be confounded with tumefaction of osseous tissue, an accident which sometimes occurs at the moment of the eruption of certain teeth; but this tumefaction, produced by the inflammation of osseous tissue, is more diffuse than that of an odontome; it presents besides the character of osteity, and generally becomes dissipated, or at least diminishes, in a notable manner, when eruption is completed. When coronary odontomes effect their eruption, that part of the crown which surmounts them appears first above the gum; afterwards it generally appears an irregularly dentified portion, and this extra-alveolar mass proceeds directly with the tumour, generally more voluminous, which remains included in the thickness of the bone. The diagnosis is then the same as in the preceding cases, moreover, with this, that the crown which is perceived is incomplete, and makes one with an irregular dental mass which supports it.

Finally, the odontoplastic dentified odontomes which pierce the gum have a still more easy diagnosis. Their situation upon the alveolar border, on the level of the row of teeth, proves that a dental tumour has to be dealt with, and the very irregular form of this tooth—the absence of a formed crown—proves that this odontome first appeared during the odontoplastic period. More than once these tumours have been taken for a sequestrum, or for an exostosis of the maxillary bone, but this error was only possible at an epoch when the history of odontomes was unknown.

We shall now pass to those odontomes which remain enclosed in the thickness of the jaws. The diagnosis here is rendered more difficult by this circumstance, namely, that the tumour is inaccessible to direct exploration; but on the other side, the especial disturbances which it undergoes at the eruption of the teeth, which are as serious as they are voluminous, furnish important and sometimes decisive indication. The first element of diagnosis is the determination of the epoch and the precise spot where the tumour made its first appearance, and the connection which it shows with the preparation of dentition. If the tumour occupy the region of the incisors the idea of an odontome is dismissed as improbable, because up to this point the germs of these teeth do not appear to have any tendency to become developed in the form of a solid tumour. Judgment must be more reserved if the tumour is situated in the region of the canine tooth, for one example is known of an odontome of this tooth, but only one, at least in the human subject; and in this unique case the odontome appearing after the formation of a large portion of the crown (coronary odontome), did not hinder the latter from becoming erupted, so that really there does not exist any observation of an odontome in a human canine tooth situated in the enclosure of the jaw. Finally, all the facts gathered up to the present day authorise us to restrict our diagnosis of enclosed odontomes to those occupying the region of the molars. Let us, then, consider a maxillary tumour developed in the region of the molar teeth, and whose formation, anterior to the epoch of eruption of these teeth, is effected on the opposite side. These two first conditions are necessary for the tumour to be an odontome, but besides, it is necessary that the eruption of the molars on the affected side should be incomplete, and that at least one of these teeth should be missing, for we shall leave aside the very improbable eventuality of an odontome developed in a supernumerary bulb.

There is wanting, we say, at least one tooth—that which is the seat of the odontome. The confirmation of this character is easy, even in subjects whose dentition is not completed, because the healthy side of the jaw furnishes a state for comparison; but it is not sufficient to prove that the dental arch is actually incomplete; it is necessary to prove by a precise investigation that it has always been so. Most of the maxillary tumours cause, in fact, shaking or fall of one or more teeth; formerly the teeth, although firmly fixed, were extracted, in the hope of putting a stop to the pain caused by the tumour. This is an error to which it is sufficient to call the attention of practitioners. Thus, the absence of one or more teeth proves nothing; but when it is proved that these teeth are absent from want of eruption the diagnosis of an affection of one of the dental follicles becomes very probable. This affection may be a cyst or an odontome, and at first the diagnosis is often doubtful. When the dental cyst is sufficiently advanced in its development it lessens the thickness of its bony shell; it may become fluctuating, and even transparent, and the uncertainty disappears then. (*a*) But already, before this epoch, the diagnosis may be made, if not certain, at least probable, by the following circumstances: The dental cyst is developed principally on the side of the anterior external face of the inferior maxillary, whilst in general the odontome makes besides a projection more or less considerable upon the posterior internal face of the bone. In the superior maxillary this distinctive trait is less pronounced, although it is not entirely wanting.

The tumour of the dental cyst does not approach so near to the alveolar border as the odontome; it is generally arrested at more than a centimetre from the line of the emergence of the teeth. The odontome, on the contrary, during development, invades and dilates the alveolar border, and comes in contact with the gum. The dental cyst does not affect the eruption of the neighbouring teeth. The tooth whose follicle is affected is absent; but those which precede, and those which follow are complete, and even form a perfectly continuous row, so that the defect in dentition is not evident, and it is necessary to count the teeth to prove it.

The odontome, on the contrary, hinders the eruption of the teeth which ought to follow in order after the affected tooth, sometimes even one or more of those teeth which precede it. These different distinctive characters lose all or part of their worth when the affection occupies the follicle of the wisdom tooth. The diagnosis may then remain doubtful, if there is not

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(*a*) We read, nevertheless, in an observation of M. Nélaton, that an encysted fibrous tumour (that is to say, an embryo-plastic odontome) of the inferior maxillary presents a slight translucidity. An exploratory puncture made with a cataract needle proves that there is no question of a cyst, but of a solid tumour.—*Gazette des Hôpitaux*, 3 Juillet, 1852, p. 109.

the resource of making an exploratory puncture, which ought to be made at the most depressible point. The situation of this point already furnishes an indication of a certain value; in the odontome it is generally found upon the face of the tumour, which corresponds to the alveolar border, whilst in the question of a cyst, it is always on the anterior external face of the tumour that the wall is most thinned. The character designated by Dupuytren under the name of *parchment sensation*, is observed both in cysts and odontomes. It is, besides, certain that many other kinds of tumours, maxillary, in dilating and thinning the compact texture of the bone, give place at certain points and at a certain moment to the same sensation. This characteristic has not, then, all the value accorded to it by Dupuytren. We must not forget, besides, that it is manifested rather late, when the odontome has sufficient volume to render the bony shell which surrounds it flexible; finally, we must add, that it disappears when the tumour is dentified.

If it was given to a surgeon to examine a dentifiable odontome before, during, and after dentification, to prove, first, the existence of a depressible tumour giving parchment crepitation, and to observe that later this tumour is become very hard, the diagnosis would be quite certain.

It would not be less so if upon that face of the tumour which corresponds to the alveolar border is felt with the finger the kernels of a bony hardness round a substance still supple and depressible, which would be unequivocal of an odontome in the course of dentification. In a case of this kind on which I operated with my much regretted friend, Follin, I had diagnosed it before the operation as a myeloid tumour, remembering a portion on which I had found osseous vegetations sufficiently voluminous in the midst of a myeloid tumour of the inferior maxillary. After the operation, I found with surprise that it was a tumour in the course of dentification—a surprise very natural, from the fact then entirely new, and at the present day unique in science. It was this remarkable case that led me to the explanation of dentified tumours, and which allowed me to constitute a group of odontomes; and I have grounds for believing, that when a similar fact presents itself anew for observation, the characteristic which led me into error will be precisely that which will serve to establish an exact diagnosis.

Dentified odontomes have been taken more than once for exostosis, or for sequestrum, not only on account of their hardness, but still more on account of the results furnished by direct exploration made by means of the probe.

It must not be forgotten that these tumours often provoke the formation of an ossifluent abscess with numerous open fistulæ, either in the mouth or on the exterior. The probe introduced into these openings meets sometimes with bony portions, carious or softened by inflammation; but it penetrates besides into the cavity which encloses the odontome, and knocks against the hardened and eburnated surface of the tumour. The mobility of this has several times been proved by the aid of the probe, or even by aid of the finger in certain cases, where the gum, largely ulcerated, allowed observation in the interior of the mouth of the surface of the odontome. These physical characteristics, joined to the history of the case, ought to render quite clear the diagnosis of dentified odontomes. If it has been otherwise up to the present time, it is because the attention of surgeons has not yet been called to these tumours.

Treatment.—Odontomes bear no other treatment than extirpation, and what we have said above of the gravity of the accidents they may produce, authorises us to add that this treatment should be applied as soon as possible. Most of the patients who have been operated on, have undergone resection of the corresponding part of the maxillary because an organic affection of the bone itself has been diagnosed. But the indication is quite otherwise, now that it is known that these tumours are strangers to an osseous tissue, that they do not undergo repetition, and that they are contained in a cyst that renders enucleation easy. We must then propose to remove only the tumour, and not to submit the osseous tissue to more than the necessary loss of substance for practising enucleation.

This method of enucleation, instituted by Dupuytren for the treatment of the "fibrous bodies" of the jaws, which are but a variety of odontomes, should then be extended to the treatment of all other odontomes. It is always applicable to odontomes of the upper jaw. When the tumour occupies the lower jaw, it may be that the bone, dilated, reduced, or even absorbed in places, does not possess sufficient resistance to preserve its continuity after enucleation, and then resection becomes inevitable, but it is rarely that this condition can be proved before the operation. The surgeon should then choose first to confine himself to enucleation, but should always be prepared, the case requiring it, to practise resection and arrange his operation with a view to this eventuality.

The most simple case is that of a radicular odontome whose crown has been erupted. On the one hand, this crown gives purchase to the dentist's instruments; and, on the other, the tumour is very close to the alveolar border, and contained in a very much enlarged alveolus, from which it does not seem difficult to extract it. In a case communicated to the Chirurgical Society, by M. Maisonneuve, this surgeon having proved the existence of a maxillary tumour, on which he proposed to operate, advised the patient first to have a tooth extracted, which was above the tumour. The patient then went to a dentist, who extracted the tooth without difficulty, and removed at the same time a radicular odontome of the size of a small nut, which was in connection with the tooth, and constituted the whole of the tumour (*a*). It is probable that the removal of radicular odontomes is not always so simple; but it is probable that it might always be so, either by extracting one or two neighbouring teeth, or by causing a slight loss of the alveolar border, without noticeable impairment or exterior incision. If I limit myself to saying that this is probable, it is because experience furnished by a single fact is not sufficient to establish a positive rule.

Odontomes entirely enclosed in the thickness of the jaws can only be extracted through a considerable loss of the substance of the wall of their osseous cyst. Those which occupy the anterior part of the molar region may at first be attempted by the mouth without previous incision; but the patient should be warned that incisions may be necessary, and that resection may be indispensable. As to those odontomes which extend as far as the level of the posterior molars, they may also be extracted by the mouth, but only when they are completely dentified; and when, an exploration having been made with the probe across the fistulæ, the mobility of the dental mass has been certified; or again, when this mass, having ulcerated and perforated the gum, has made a projection into the buccal cavity, which gives a hold for the instruments. But when there is no ulceration, nor fistula, the tumour whether dentified or not, is not sufficiently flexible to be removed by a simple incision of the gum; it is necessary to lay open in its whole length the external wall of the osseous cyst, which cannot be effected except by an incision in the cheek. This incision, starting always from the labial, should be directed obliquely upwards, if it be a case of an odontome of the upper jaw. If the tumour occupies the lower jaw, the surgeon should cut the flesh, following one of the usual methods in the partial resection of the body of this bone.

The external side of the tumour having been laid bare, the corresponding wall of the osseous cyst should be attacked by the aid of appropriate instruments and wholely excised; then, according to whether the tumour appears more or less enucleable,

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(*a*) *Bull. de la Soc. de Chirurgie*, 11 Juillet, 1855, t. vi. p. 59. Forget, *Mem. sur les Anomalies Dentaires.* Paris, 1859, in 4to., p. 24.

or whether should be found below an osseous portion capable of maintaining the continuity of the bone, should be decided for enucleation or resection. It is well understood that enucleation to be efficacious, must be complete; for should there be left behind the least particle of an undentified odontome, there is a liability to return. The best method of avoiding this accident, consists in removing not only the tumour properly so-called, but the membranous wall surrounding it; for that it is necessary to use a probe, a raspeur, or one of those instruments which are employed in sub-periosteal resections for detaching the periosteum. This precaution would be useless if the odontome were entirely dentified, and above all, if separated from its membranous cyst by a layer of pus.

EXTRA COHESIVE FOIL.

By GASCOIGNE PALMER, L.D.S., CHELTENHAM.

In the February number of the *Dental Cosmos*, amongst the advertisements, is one of "The Globe Foil," occupying a whole page, and half way down the page the wording runs thus:—

"*Extra Cohesive Foil* is a grade which in the *stale* condition may be worked cohesively in the form of pellets or ribbons, but when heated in the flame of an alcohol lamp, it becomes exceedingly cohesive, and can then be used successfully only by those who fully understand how to take advantage of this property."

I propose in the present paper to reply to the objections raised to the use of cohesive gold foil in the February and March numbers of the *Dental Journal* by Mr. Fletcher, F.C.S., and Mr. George Ross, L.D.S. To both these gentlemen I would ask the question, Do they feel themselves in such a position as to say that they fully understand how to use and take advantage of extra cohesive foil? and if so, are they prepared to state that a perfect plug cannot be made with it? I take the globe foil (extra cohesive foil) because up to this time it is the most cohesive foil I have tried, and of course, if there are objections to cohesive foil, they must apply to this as much, if not more, than to any other description of cohesive foil.

The articles in the *Dental Journal* I have referred to are three in number, two by Mr. Fletcher and one by Mr. Ross, and the whole sum and substance of the three articles amount to this—that it is impossible to make a moisture-tight plug with cohesive foil.

Now, before proceeding further, I wish it to be distinctly understood that I do not for one instant wish to run down plugs made on the non-cohesive or semi-cohesive principle.

Wherever it is possible to put a non-cohesive plug in a tooth in a satisfactory manner, do so by all means; it will save your patient much discomfort in keeping the mouth open long; it will save the dental surgeon much time; and I am perfectly satisfied that the plug will last just as long as if put in cohesively, although, at the same time, it will be impossible to put so high a finish on your work, or for the work to retain its finish so long.

But here is the difficulty: supposing you have such a cavity that it is impossible to fill non-cohesively, what is to be done? Either fill it with amalgam, or else fill it cohesively with gold.

Now, my view of the matter is therefore not so much a question of the goodness and fitness of non-cohesive as against cohesive foil, as between the relative qualities of cohesive gold and any amalgam that can be made. Mr. Ross, after taking much trouble to show that he thinks matured experience can only be gained by constantly working in one groove, and that there can be no doubt about non-cohesive gold being better than cohesive, finishes his paper thus:—

"Nevertheless, I would say, if you had acquired any experience in soft foil in these positions, *go on with it*; but if, on the contrary, you have experienced any *difficulty*, I would say, for *very small* cavities in the front teeth, when on account of the smallness of the cavity *any amount* of *time* and *care* can be bestowed on the plug, try that which I have denounced for large cavities as no better than amalgam—viz., cohesive gold."

Here I think Mr. Ross fails in his argument. After denouncing cohesive foil in an unsparing manner, he recommends dentists to try it for very small cavities, unless they have acquired experience (success, I suppose, would be out of the question) in non-adhesive foil. More than this, he seems to me to admit that where sufficient time and care can be bestowed on a cohesive plug, it may answer as well as an amalgam one.

Here Mr. Ross and myself to a certain extent agree that it is not so much a matter of cohesive *versus* non-cohesive gold, as of cohesive gold *versus* amalgam. But more than this, if from some quality which Messrs. Fletcher and Ross understand, it is impossible to make a plug moisture tight with cohesive gold, how is it that Mr. Ross recommends it for very small cavities? To me the recommendation appears rather inconsistent, unless the matter is summed up thus:—

Mr. Ross believes in non-cohesive plugs. Mr. Ross says that cohesive plugs are no better than amalgam, *ergo*, when a cavity presents itself to an operator that it is impossible to fill with non-cohesive foil, fill it with cohesive, or that which is quite as good, amalgam. But then, if he meant this, why did he not say so? I should not have written one word of this if the only readers of *The Dental Review* were practising dental surgeons. My own belief is that in nine cases out of ten they, like Mr. Ross, will be opposed to change.

But there are dental surgeons that be, and dental surgeons that are to be, and to these latter I would say: Since 1863 I have been working hard at gold plugs, and trying every mode, and I am just beginning to know how to use extra cohesive gold successfully, and how fully to take advantage of its properties, thus making a plug in places where non-cohesive gold cannot be used—a better plug than can be made with amalgam, more moisture-tight, and producing far less discolouration of the tooth.

One word more and I have done. There is no reason that I know of why a large cohesive plug should not be made anywhere where a non-cohesive one is made, save this, that it takes four or five times the time, and far more skill; but at the same time I would recommend no one to use cohesive foil for such a cavity as can be thoroughly, perfectly, and densely packed with non-cohesive or soft foil, although, if he likes to fill the tooth below the margin of the cavity with non-cohesive foil and then put a facing of extra cohesive foil on the surface, he will get, and the surface will keep a better finish, than can be obtained in any other way. At all events, I do not think that I could put a cohesive gold plug in one of Mr. Fletcher's glass tubes (that is to say, a moisture-tight one), for my opinion is that before I had one quarter finished my plug, Mr. Fletcher's glass tube would have become glass dust, seeing that, unlike the working of non-cohesive foil, the walls are packed first, and the centre as the walls grow up or down.

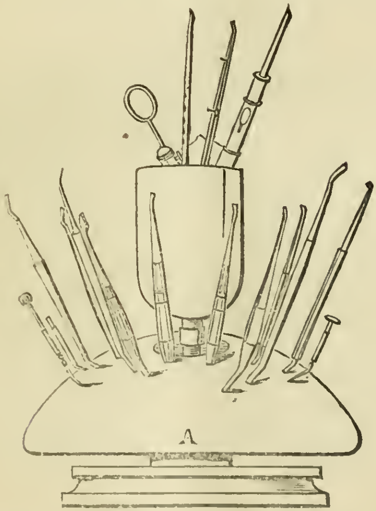
ACTION OF WATER AND OF CERTAIN SOLUTIONS OF NEUTRAL SALTS UPON SUGAR.

The author refers to the experiments of Soubeiran, Berthelot, Maumené, and Bechamp, and seeks to verify their results by employing both polarised light and the cupro-potassic liquor. He confirms the disputed view of Maumené—the transmutation of sugar into inverted sugar at common temperatures, and without any notable formation of mould. The author adds that it is not possible to determine glucose by the saccharometer, as the errors of observation exceed the effect of the glucose produced. The determination can only be made by means of the cupro-potassic tartrate, which other carbo-hydrates have also the power of reducing.—*Les Mondes, Revue Hebdomadaire des Sciences.*

A NEW INSTRUMENT STAND.

By WARWICK HELE, L.D.S., CARLISLE.

In the January issue of *Johnston's Dental Miscellany* there is depicted an instrument stand for engine burs. In the early part of last year Mr. Oakley Coles kindly showed to me his plan of placing instruments, when in use, for rapid assorting and handling. The principle in both is alike—viz., the use of stands provided with holes, of such a diameter and depth, that instruments dropped into them assume more or less of the perpendicular, and so exhibit their working extremities for selection. In October, 1872, I adopted a modification of the same plan when designing the stand, an illustration of which accompanies this paper. I have found the "Porcupine Instrument Stand," as it has been called, of the greatest service, and I am sure it will be found of especial value to those who have the Morrison Dental Bracket. The diagram will make the design apparent; it is, however, necessary to say that at *a* there is a pivot on which the whole top revolves; by means of this the operator may bring any instrument required to his hand by a part revolution almost instantaneously.



The following are the dimensions:—

Extreme height, 9 inches; extreme diameter, 8 inches.

Height of base, 1 inch ; diameter of base, 6½ inches. Height of pivot, 1¼ inch ; diameter of pivot, 1 inch. The pivot passes through the centre of the base, and is attached to the instrument holder, there being ¼ of an inch between to allow of easy turning. Height of instrument holder, 4 inhces ; extreme diameter, 8 inches. Height of cup, 4 inches ; diameter of cup, 2½ inches.

The holes are arranged in three rows, an inch apart from their centres ; the first row is of holes ⅜ of an inch diameter ; the second row is of holes ¼ of an inch diameter ; the third row is of holes 3-16ths of an inch diameter.

These three rows of holes provide accommodation for an ample selection of stoppers, excavators, and engine burs. The cup forms a capacious receptacle for spunk, mallet, speculum, and gold foil carriers.

The whole stand is turned out of solid rosewood, in three sections, and afterwards jointed together.

FLETCHER'S EXPANDING AMALGAM.

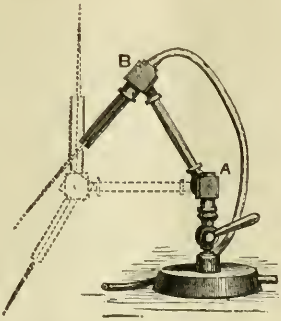
This amalgam may be mixed soft or dry, as required, without affecting the result. It combines readily with mercury if rubbed in a small mortar, but it is too plastic and penetrating in its nature to be mixed in the hand without being driven into the pores of the skin.

The expansion is very slight and takes place before the mass becomes hard, making an absolutely moisture-tight plug, but entailing no risk to the most fragilē teeth.

The amalgam must not be washed, and must be mixed only with the required quantity of mercury, as the mercury cannot be separated without injury when once mixed ; the hardness and time of setting depend on the proportion of mercury used. It is especially useful for large fillings.

FLETCHER'S NEW BLOWPIPE.

This is a further improvement on Fletcher's Simple Herapath Blowpipe, and is, perhaps, the best practical form of any for dental purposes. The improvement consists in the addition of a second revolving joint A, which gives the power of at once turning the flame to any required height or position, and enables the jet to be projected a considerable distance clear from the stand. Like all the other blowpipes by the same maker, it allows perfect freedom of both hands and had when used with the mouth—no slight advantage. For most purposes this is the best blowpipe we know of.



DENTAL MALFORMATIONS.

By ROBERT BAUME.

(VIERTELJAHRSSCHRIFT FUR ZAHNHEILKINDE.)

II.—ENAMELLESS MALFORMATIONS.

I RECEIVED lately from Herr Stuber, of Berlin, a present of a very rare preparation. It may be considered as one of the enamelless malformations, which I have previously described under the name of "rare malformations." (*a*)

I had intended after having made public the first five cases found under peculiar circumstances to make no further communications, until I had perceived observations and explanations from other sides. By chance, Herr Stuber discovered under special conditions, a similar malformation, which he allowed me to have for closer observation. I will here give a description.

In the mouth of a Javanese, a man of about 35 years, the right upper first molar caused severe pain, and on that account was obliged to be removed. Under close observation, it appeared, that at the neck of this tooth, between the mesial and lingual fang, a rounded hard formation of about three millimetres in breadth was attached. The attachment of this rounded body with the molar was effected by means of a fibrous band of about three millimetres in length. The body in question must then, according to the accompanying details have lain in the septum between the first molar and second bicuspid. On observing closely this formation, there was observed a somewhat uneven yellowish surface which appeared transparent. It was recognised without

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(*a*) *Vierteljahrsschrift*, 1872. S. 23, N. 189.

difficulty, that the body in question was formed out of tooth substance; and, indeed, the surface apparently from cementum. Notwithstanding the most careful examination having been made of the outer surface of this body, not the slightest trace of enamel could be found.

I prepared some sections of this little formation, in order to ascertain whether under the microscope the want of enamel could be proved. I made three sections, two of which were from the surface. In these two last sections, no trace of enamel was to be seen; there was only found bone corpuscles therefore we had here cementum which formed the outer upper surface. The third section, which was cut through the middle, showed the following conditions. Two different substances could plainly be recognised, the one in the centre being dentine, the second which surrounded the dentine cementum, as had already been proved from the first two sections taken from the upper surface. No enamel was to be found in these preparations. According to the whole arrangement of the substance, it may be concluded, that there was no enamel existing here.

With respect to the dentine present in this malformation, it appeared normal. The dentinal canals ran pretty direct, and and centripetally towards a small cavity in the centre. The second part, the cementum, is somewhat remarkable, as seen under the microscope. *There appeared—namely, in that portion of the malformation, which represented the crown of the tooth, a kind of button which was formed of cementum* in the manner which I have described in former essays.(*a*) Otherwise the dentine is surrounded on all sides by cementum, which does not show any abnormal appearance. A conspicuous circumstance, however, is the periphery, Howship's lucunæ appear a proof that resorbtion of this formation had set in.

Between dentine and cementum, which are in close contact, appear interglobular cavities. In this formation the dentine and cementum do not show any striking digression from their normal condition, which I had generally found to exist in previous cases. The want of enamel is here, however, very striking. It may be believed that no enamel was present when from so small a body three sections were examined, and we may consider that the details have been exhaustively studied. From these circumstances, and strengthened by the consideration of malformations previously described, I consider that this was one of the enamelless malformations. I consider this proof of importance, because up to the present time no malformation has been known in which the fact of enamel being entirely wanting has been established. We find even on dwarfed teeth which are hardly so

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(*a*) *Vierteljahrsschrift*, 1872. S. 23, und 27, Figs. I. und III., bei a.

large as the above malformation, enamel on the outer surface in the mouth at the first glance. It has hitherto been considered that the development of the tooth was dependent on the presence of an enamel organ, that is to say, on the division of the epithelial element of the mucous membrane of the mouth. As will be seen, however, from the six cases published by me, tooth structures may be formed which appear normal under the microscope, without a trace of enamel. The above malformations have apparently been developed from a papilla enclosed in a tooth sac.

Curiously enough, hitherto *I have only found these enamelless malformations in the neighbourhood of the bicuspids of both jaws.* Two of these formations lay in the septum between the two bicuspids, and the other two in the septum between the second bicuspid and first molar.

It is, at all events, a remarkable occurrence that I should only have seen this malformation in the neighbourhood of the bicuspids. Other accounts in literature have undoubtedly shown that these bodies appear in the districts of other teeth. There is, for example, a preparation of J. Salter's shown in Tomes' work. This representation shows us an incisor to which is attached a curiously formed appendix. This appendix is like, if the drawing is correct, an enamelless malformation as it appears outwardly. Salter describes this formation as "warty hypertrophy." From this example, then, we know that these bodies also appear in the neighbourhood of the incisors.

We find a second case in the Atlas of Heider and Wedl, in Figs. 28 and 29. Apparently, in this case it is, as Heider thinks, the meeting of the wisdom tooth with a supernumerary tooth germ. Notwithstanding the want of enamel, a supernumerary tooth could have occurred, for it is possible, as may be seen from the above facts, to have a formation of tooth structure without the participation of the enamel organ. The best proof for this assumption is the spontaneous appearance of such enamelless malformations.

It is proved in the case communicated by Heider and Wedl, that such abnormal developments of enamelless tooth structure may take place in the neighbourhood of the wisdom teeth. The six malformations discovered by me are very small, and vary between 2-6 millimetres. From the case, however, described by Heider and Wedl, we may see to what a monstrous expansion such supernumerary enamelless tooth germs may be developed.

The proof of the fact that such enamelless tooth structures exist, is, at all events, of great importance in the history of the development of the teeth. On these grounds I have again allowed myself to bring forward this question.

REPORT ON DENTAL LITERATURE.*

DENTAL LITERATURE COMMITTEE, NEW YORK, U.S.

In making a report on the magazine portion of Dental Literature we shall endeavour to make such a summary that a more comprehensive idea may be had of this branch of the subject than we have been able elsewhere to obtain.

To begin with, there are 7,839 dentists in the United States, to about 2,200 in Canada, and nearly 4,000 in Europe and the larger capitals elsewhere, a sum total of about 14,000, of whom 10,000 live in America. Unhappy Americans!

Among these 14,000 dentists there circulates a great number of periodicals of various degrees of excellence or otherwise. According to the best information we can obtain, one of these is in Italian, two in German, one in French, one in Swedish; three are published in England, and four in America.

Of these twelve prominent journals, five are independent of other commercial transactions—"The Vierteljahrsschrift," published in Germany, "The British Journal," "The Odontological Society's Transactions," and the "Monthly Review," published in England, and the "Missouri Journal," published in America—out west—while all the others, so far as known, are primarily maintained for the purpose of advertising some one's merchandise or practice, or school, and would at once be suspended were that object removed. There were certain other journals lately published, but we have to record the suspension during the year of three of these, of which two have been for many years established—"Der Zahnarzt," "The Philadelphia Dental Times," and "The Canada Journal of Dental Science."

On the other hand, there have been at least three new journals established—the "Correspondenz Blatt fur Zahnarzte," in Germany, and the "Giornale di Corrispondenza pei Dentiste," for Italy, both published in Berlin, by Messrs. Ash and Sons, and the "Monthly Review of Dental Surgery," published in London. The "Vierteljahrsschrift fur Zahnheilkunde," which is now in its thirteenth year, is the organ of the Central Association of German Dentists, and is a quarterly publication; it has assumed the work, and endeavours to fill the place, of "Der Zahnarzt," which was suspended at the end of its twenty-seventh year. This latter was a monthly publication.

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* We have been favour ed by a Correspondent with an early copy of the above Report.

The former publisher of "Der Zahnarzt" undertakes the publication of the "German Quarterly," at his publishing house in Leipsic, while Herr Baume, of Berlin, undertakes the editorial control, thus making it a purely literary venture on the part of the publisher, who is not otherwise interested in dental goods. This gives to Germany one thoroughly independent and high-toned journal which is the organ of an association somewhat like this one, and is sustained by its members.

The other German "Journal of Correspondence," as well as the Italian one of the same name, are published and managed, as before stated, by Messrs. Ash and Sons, of London, through their branch house in Berlin, who have, as a primary object in publishing these journals, the furnishing of a medium for their own advertisements of dental goods to be spread before the profession. The other new journal is published in London, and is an outgrowth of the feeling which is gradually permeating the minds of our trans-Atlantic brethren—that freer and fuller discussion of matters connected with our specialty is essential to a rapid progress therein.

It will be noticed that the proceedings of the American Dental Association are not included in the list of periodicals, any more than the proceedings of the State societies; yet two of the journals mentioned—the "German Quarterly" and the "Odontological Journal of Great Britain"—are the organs and the record of the proceedings each of a society, and are among the most valuable of the publications which are confined strictly to dental specialties.

To return now to the magazines of our own country—as has been already stated, the "Philadelphia Dental Times" and "Canada Journal" have been suspended; there remain the "Missouri Journal," "The Cosmos," "The Register," and "The American Journal," as media of communication between the members of the profession.

With regard to the first-mentioned journal, it seems to be independent of all business interests that would overshadow or retard the positive advance in science, and knowledge of all useful kinds in our profession, including the knowledge of how and where to get on the best possible terms the materials needed for our work.

So far as the other three journals are concerned, they are apparently published with the design of causing their literary matter to carry the advertisements, which is the essential thing to their respective publishers.

One, at least, of these magazines declines to publish the advertisements of rival firms at any price ; hence we are now threatened with the establishment of two more so-called dental journals, which will be published, if at all, primarily in the interest of manufacturers having wares to sell ; and therefore cannot be expected, any more than those already established, to take the high professional ground that ought to be occupied by a scientific journal.

It is a noticeable fact that since the days of the old series of "The American Journal of Dental Science," dental literature in this country, as represented by the bulk of magazine articles, has been at a low ebb, many of the men of the highest ability and most extended experience having withdrawn themselves almost completely from contributions to our science through these vehicles.

It is a well-known fact that any dealer in dental goods, publishing a magazine, is liable to lose a customer if he declines to publish an article sent to him, no matter how crude, ill-constructed, or ungrammatical it may be. If the magazine is published by a college, conducted as most of these institutions now are, the fear of losing a student, or the influence of a former student, would be equally operative in in case communications of a similar nature are rejected, and we cannot blame business men for conducting their business operations strictly with an eye to the largest pecuniary returns.

Turning now, for a moment, to the other side of this question, it cannot be denied that much labour and care have been expended to make these magazines worthy of being read, and to enhance their value as literary productions, but in the very nature of the case it has been impossible to produce the best results.

Very many gentlemen, capable of instructing us each in his own special department of study, decline to give their best efforts to any of these ephemeral publications, but furnish articles of sterling merit for the meetings of the various societies, which are oftentimes copied far and wide ; and it gives us pleasure in this connection to step out of our way to notice the published proceedings of the Illinois and Iowa State Societies, which, within the last two years, have contained as much valuable original matter as, perhaps, all the magazines of this country put together.

The "Missouri Journal" has not feared to speak out truth-fully and plainly in regard to several abuses—notably the hampering of discussion in regard to dental education, and the unfortunate position of our current literature.

It contains, during the year, about twenty articles that might be called scientific, of which nearly all are copied from sources not always accessible to the dentist. A few are original.

A large number of articles that may be called literary, such as descriptions of modes of practice, new instruments and appliances, the proceedings of societies, and the interchange of views, or guesses regarding certain questions that are under discussion, constitute the balance of its table of contents, which, by the way, is not at all well arranged for the student to know at a glance whether a given article is original or copied, or who is the author.

The "Cosmos" contains about ten scientific articles, of which one runs through the entire year; and twenty-three literary articles, all of which are original.

The table of contents of the "Cosmos" is admirably arranged, and one may know immediately whether an article with a given heading is original or copied from some other source; and if the source quoted from could be included, it would be a great assistance.

The "Register" is under its old editorial management, but it is now published by a firm of dealers in dental goods, as is also the "American Journal" of the new series. A few original articles of some value have appeared in these journals during the past year, but most of the more valuable contents of their pages, exclusive of the advertisements, have been copied from other publications.

The new "Monthly Review," of London, contains a large number of original articles, and is about equally divided between scientific and literary matter. It seems to be thoroughly alive to the best interests of the profession; and while able to furnish a large share of its scientific articles from first hands, it draws freely upon both medical and dental publications in the United Kingdom, upon the Continent, and in America. It takes the highest stand in regard to dental education, and has less heavy gravity, or what might be called the dignity of dulness, than any foreign magazine of which we know.

A noticeable series of articles have been those upon Fletcher's fillings, including the reports of the committee appointed to examine into their merits, and involving inquiries into the whole series of oxychloride of zinc fillings.

The physiological researches of Mr. Tomes may, perhaps, be mentioned as being of great interest, and as showing the bearing of the doctrines of Darwin and Huxley upon the every-day matters of our work-day life.

The "British Journal" has continued the even tenor of its way, containing much that is useful, very much that is on a par with our own journals, and, in fact, with all other journals of our specialty which are published monthly.

One eminent service it renders each year—it lays before the practitioners and students the examination questions propounded at the College of Surgeons, both for admission and for graduation, so far as it is able; and by this publicity stimulates both teachers and pupils to higher and fresher attainments.

To sum all up, it is the opinion of your Committee that our magazine literature needs two things sadly: independence—the opportunity for free expression, regardless of anything but the truth; and recognition by and co-operation with, the medical journals already established, in whose columns a few of our number are already making themselves felt, and by so much enhancing the dignity of their profession.

We are of the opinion that a journal published, perhaps, quarterly, and managed by the dentists themselves, as the organ of a society, or of several societies, and published in the interests of the highest and best needs of the profession, would be a power for good, and would draw out a quality of support superior to that now accorded to the journals. Such a magazine could advocate a high standard for graduation to a degree, and not fear the withdrawal of valuable patronage in case of a comparison between two rival schools; nay, it might advocate the closing up altogether of all but one or two of our schools, and the establishment of a board of examiners from the profession at large, who alone should have the power to grant degrees, and who, by their searching and impartial examinations, should make a degree worth more than the bare money cost of getting it.

ON TEMPERING STEEL FOR TOOLS.

THE following procedure, due to M. Kulicke, is in use at the works at Saarbruck. It serves to restore the nature of steel altered or burnt, and consists in plunging the article—previously brought to a cherry-red heat and forged for an instant—into the following mixture, and then into cold water. Tartaric acid, 12 parts; fish oil, 60 parts; powdered charcoal, 4 parts bone-black, 16 parts; yellow prussiate, 20 parts; tallow, 20 parts; burnt stag's horn, 6 parts.

THE MEDICAL PRESS ON THE NEW DENTAL HOSPITAL.

[BRITISH MEDICAL JOURNAL.]

THE new building in Leicester Square was formally opened on Monday night, the event being celebrated by a *conversazione*, to which a number of distinguished visitors were invited by the Managing Committee. The ordinary monthly meeting of the Odontological Society took place at eight o'clock; and the President, Edwin Sercombe, Esq., delivered an inaugural address that was of unusual interest on account of the occasion on which it was given, and still more remarkable for the very great ability of which it gave evidence. During the course of the evening, six or seven hundred visitors inspected the rooms of the new building, and were shown by the office-bearers of the hospital and the Odontological Society the various arrangements that had been made for the accommodation of the staff of dental surgeons and students, as well as of the lecturers at the School of Dental Surgery. A number of objects of interest were exhibited in the principal rooms; and a very beautiful series of microscopical subjects, illustrating the development of the teeth, was shown in the library by Mr. Charles S. Tomes. Altogether, the evening was a success; and the visitors, both professional and non-professional, evinced the greatest interest in the proceedings. On the completion of this building, we feel that Mr. Edwin Saunders may be fairly congratulated, for to that gentleman's munificence and energy the success of the enterprise has been mainly due. At the same time, the entire dental profession have readily responded to the appeal made to them for help; so that an important and very valuable institution for the alleviation of pain amongst the suffering poor has been handed over to the trustees for the public, ready for immediate use, and entirely free of debt.

[LANCET.]

THE committee of this hospital gave a *converzazione* on Monday last, the 2nd instant, in their new building in Leicester Square, which was very numerously attended. Mr. Sercombe, the President, delivered an inaugural address, which commended itself to his listeners both on the score of brevity and quality. We have already described in detail the arrangements of the new establishment. The large room for special operations, as stopping, &c., at the top of the house, was much admired, as also the museum and lecture-hall. A number of chairs were exhibited, as also several novel methods of illuminating the mouth. We believe that this institution has entered upon not only a new but a long lease of success, thanks to the active and continued exertions of Mr. Edwin Saunders, Mr. Sercombe, and the other trustees.

[THE MEDICAL PRESS AND CIRCULAR.]

An imposing structure on the south side of Leicester Square, henceforth to be known as the Dental Hospital, was opened on Monday week last with a *conversazione*, and an excellent address from the President of the body of dentists, Mr. E. Sercombe, M.R.C.S. A period of nearly twenty years has now elapsed since the first idea was broached of forming a dental branch of the profession upon a basis which should bring this important body of dentists more into accord with the advanced surgery of the day. Accordingly, two Societies were almost simultaneously started, "The Odontological," and the more pretentious one, "The College of Dentists of England." The latter had in view the granting of a diploma, but this was soon abandoned, although the promoters of the Society did much good in starting a course of lectures for the instruction and improvement of the rising generation of dentists. We remember full well in 1856 and 1857 the admirable courses of lectures delivered by Drs. Richardson and Gladstone, F.R.S., Mr. Jabez Hogg, the late Mr. G. Simpson, Dr. Steggle, and other gentlemen. The movement was pre-eminently an educational one, and the first idea of its supporters has gradually developed into one of augmented importance, and such a one as the dental body met to inaugurate on Monday week last. The new hospital comprises several sets of rooms devoted to operative and mechanical dentistry, a library in which there is a good collection of works on dental surgery, a museum containing numerous and rare specimens, and a convenient lecture-room. The staff is an excellent one, and there are already more than fifty students attached to the hospital. There was a large attendance of the heads of the medical profession at the opening *conversazione*, and among the notables we observed the Presidents of the College of Surgeons and Physicians, W. H. Smith, Esq., M.P., Sir William Fergusson, Albert Grant, Esq., M.P., Colonel Hogg, Dr. Quain, Mr. Saunders, Mr. Ibbetson, &c. A number of interesting preparations of tooth structure were shown under microscopes by Mr. Tomes, jun., Mr. Henry Lee, Mr. Jabez Hogg, Mr. Conrad Cooke, Mr. Lockart, Dr. Millar, and other gentlemen.

SOLUBILITY OF ARSENIOUS ACID IN WATER.

One part of crystalline arsenious acid dissolves, after twenty-four hours' digestion, in 355 parts of water at 15° C. The amorphous acid, in the same conditions, requires 108 of water. If the crystalline acid has been dissolved at a boiling heat, and the solution left to stand for twenty-four hours, it contains to one part of acid forty-six of water. The amorphous acid, in the same circumstances, remains dissolved in thirty parts of water.—M. L. A. Buchner.

REPORTS OF SOCIETIES

THE ODONTOLOGICAL SOCIETY.

ORDINARY MONTHLY MEETING, MARCH 3.

The President, EDWIN SERCOMBE, ESQ., in the Chair.

THE opening of the new premises was signalised by a meeting of the Odontological Society and a *conversazione*.

Mr. W. E. Harding, of Shrewsbury, and Mr. W. Williamson, of Aberdeen, were electedmembers of the Odontological Society; and Mr. E. Sercombe, the President, announced that precedence would be given to all casual communications of which notice had been given to the Council prior to the meetings of the Society.

Mr. C. TOMES made a communication respecting the case of a woman, aged twenty-two, from whose lower jaw a small tumour about the size of a cobnut had been removed by means of a very small cut. Mr. Francis Mason, the operator, had suggested that the tumour was a cartilaginous formation, but upon a microscopical examination this was found not to be so. It was rather what might be called a very large polypus of the gum, springing from the periosteum. He was not sure whether it was not quite unique. The tumour was full of calcareous matter, which made it so hard as to be almost bony, and yet it contained no osseous structure. The calcareous salts were deposited in the form of calcorpherites, with which the tumour abounded. In conjunction with Mr. Oakley Coles he had visited "the Kostroma people," who were remarkable for having the whole body, save the hands and feet, covered with long silky hair. Associated with this development of hair goes deficiency of teeth, the father having but one upper tooth and the four lower incisors, and the boy only the four lower incisors. This deficiency of the teeth had been noted also in a hairy family observed in Burmah; it was found in three generátions of this family. But the most that could be said was that variability in hair went hand in hand with variability in teeth, for Julia Pastrana, a hairy woman, had an excessive number of teeth, while in Turkey there was found a nearly hairless breed of dogs which had but few teeth.

Models of the mouths of the Kostroma people taken by Mr. Oakley Coles were passed round.

Mr. MUMMERY said that he had the honour of reading, about four years ago, a paper before the Odontological Society respecting the connection between caries in the teeth and civilization, and then resolved at the earliest possible moment to place in the museum of the Society as complete a specimen as could be obtained of an ancient British skull. The difficulty in doing this was greater than could be conceived, as nothing could be learnt from the collections of skulls in some of the crypts of the north of England and the crypt at Hythe. The skulls at Hythe were pronounced by a certain eminent ethnologist from Copenhagen to be those of his fellow countrymen, and to be of a Norse type, but the information in point of date was uncertain. In all probability, however, they were the skulls of those Vikings who made predatory incursions on our coasts. As a collection of skulls, they were doubtless very interesting, but were not of a very ancient type, or of the stone period ; in fact, nothing could be learnt from them. In the course of his researches many skulls had been offered to him which he could not accept, because they had no real pedigree, and he was unable to fix the period to which they belonged, and it was through the peculiar kindness of Professor Rolleston that he was in a position to present the Society with an early British skull. These ancient skulls were usually so compressed and crushed by the superincumbent earth during the 3,000 or 4,000 years over which they had been interred, that considerable care was required on the part of Professor Rolleston in their reconstruction. The skulls of men of the stone period contrasted very favourably in regard to caries with those of the modern negro of the West Coast of Africa. The men of the stone period doubtless lived mainly on animal food, and were decidedly not agriculturists, their implements being very imperfect. The cranial capacity of the skull exhibited was highly respectable. He had laid plans for procuring skulls of the long-headed type, as found in the western parts of England, and he hoped also to get another type of ancient skull from the northern parts of England—a type in which the caries of teeth was very strongly marked, and it was a question whether this might not be attributable to the difference in the water of the north of England to that of the southern districts. As the luxuries of life increased there was a greater amount of decay. In conclusion, he expressed a hope that the museum of the Society might continue to be enriched from every quarter.

The President then delivered an inaugural address, of which the following is an abstract:—

Mr. Sercombe, after thanking the Society for the honour it had conferred upon him by his election as President, said there were periods in the existence of such a body when it was well to pause and consider whether the objects for which it was founded had been realised, and the present seemed an opportune time for such an inquiry ; but in order to arrive at a satisfactory conclusion, it was essential to understand the general importance and bearings of dental surgery, even from most remote periods, so he traced its course, beginning with pre-historic times, and the conclusions as to caries and alveolar abscess which the study of human anatomy shows in dobeocephalic and brachycephalic skulls. The ancient Egyptians were sufferers, and treated the disease. At Greece and Rome mechanical dentistry was in use, and there is hardly a period gone by where some evidences as to dental practices are not recorded. Passing on to quite modern times, we have the first reliable treatise on this subject from the pen of the celebrated John Hunter, and since his time a slender line of men eminent for their physiological attainments have devoted themselves to the care of these organs. To the honour of the combined hospitals of Guy's and St. Thomas, lectures upon dental surgery have been delivered for at least a century. The The result of this, which is now adopted at the metropolitan hospitals, has been highly beneficial; but practically, the field of dental surgery has been open to all, qualified or unqualified, who could assume the title of surgeon-dentist at will. Hence it would be easy to see how the "genus" Dentist of modern time originated, until quite late years their chief work has been to supply deficiencies, which needed no extensive education, manipulative dexterity being the great requisite. So when a man of professional education devoted his attention to the diseases of the teeth, he drew a wide line of demarcation between himself and these calling themselves dentists; but as a new race sprang up, it was felt by energetic minds on both sides, that a combination of the two was necessary; so the young dentist started on a much fairer footing than his predecessors, possessing as he did a thorough practical and professional education; but this course, so circuitous, and involving so much loss of time, was adopted by the few. A great number entered the profession with the sole idea of making money, and these have given the calling a bad name, which the high character of many who now practise has not succeeded in entirely removing. Men are still to be found calling themselves dentists, who shrink not from advertising themselves in the daily Press, as capable of accomplishing that which at present human skill is unable to accomplish; and, in the words of a recent review, upon "Dental Surgery:" "It is deplorable that journals of reputation can be induced to insert the specious and lying advertisements of such men as those to whom we refer." At the foundation of the Odontological Society it was almost universally admitted that dental surgery was "a well-defined *specialité*, too closely allied to general surgery to be separated from it." And at the first inaugural address it was stated that the dentists of England should look to the College of Surgeons for that examination which would test their fitness to practise; and preparatory to such an examinution it was obvious that a special school would be necessary. Another great object of the Society was to establish a point of union amongst practitioners, and to collect and discuss the scattered dental literature which then existed. The results which the Society had accomplished were most satisfactory. The College of Surgeons had granted a special diploma in dentistry. On this evening they were celebrating the opening of a new hospital (the one they had occupied for fourteen years having proved too small for their present requirements), which was replete with every necessary modern appliance for the convenience of the operator and the comfort of the patient, possessed a thorough staff of surgeons and lecturers, and thus a systematic education was secured for the student and a great boon conferred upon the poor, who, to the number of some sixteen thousands a year, used the charity. It was to Mr. Edwin Saunders, to whose intelligent munificence the initiaton of this present movement is due, that the thanks of all should be rendered. The Society possessed a museum containing many most valuable specimens, not to be matched in any country, and an excellent library, and it issued monthly numbers of Transactions, containing papers of deep research and interest. Nitrous oxide gas having been originally applied to anæsthetic purposes by a dentist, and the Society had made two exhaustive reports upon its properties. Thus, the specific object for which the Society was formed had been to a great extent realised—the recognition of the College of Surgeons, Dental Hospital and School, Library, and Museum founded, and, in addition, the general tone of the profession raised, and all would endorse the words quoted from a late review, "That perhaps no speciality in surgery had made greater advances within the last ten years than that concerned with the diseases of the teeth."

Mr. Saunders, in proposing a vote of thanks to the President for his admirable address, said they could only regret that time did not admit of his reading it *in extenso.* He would ask that the whole address might be printed for circulation, in order that the public as well as members of their profession might have an opportunity of reading it. The address was so liberal in its tone, and so free from narrow-mindedness, that it must exercise a good effect on the profession. One great advantage in the Society was that it brought the profession together, and promoted a friendly feeling by means of the intercourse of the members. They would scarcely believe that the first and second presidents, were until the formation of the Society, strangers, although they lived only a stone's throw from each other; but such a state of things, he was happy to say, no longer existed. They were now at the commencement of a new era in their existence, and the public would see that the Society was an organised body, having their interests at heart. He had to congratulate the President on occupying for the first time the presidential chair which had been presented to the Society.

Mr. T. Rogers supported the vote of thanks, and the request that the President's address might be printed and circulated.

The President expressed his acknowledgments, and consented to his address being printed when he had revised it, as he had prepared it somewhat hurriedly. He hoped that it might be the means of stimulating public attention to their art, and of inducing the public to support an institution which was the offspring of the Odontological Society. He would not trespass further on their time, but simply adjourn the meeting until the first Monday in April, when some interesting communications would be made by Mr. Spence Bate, Mr. Parkinson, Mr. Oakley Coles, and Mr. Sewill.

A vote of thanks to Mr. Tomes and Mr. Mummery concluded the proceedings.

NATIONAL DENTAL HOSPITAL.

The Grocers' Company have made a grant of £25 to the funds of this charity (special fund), and the Leathersellers' Company a grant of 10 guineas. The proceeds of the amateur drematic performances at the St. James's Theatre, recently given in aid of the same object, realised about £28, a concert at Croydon £20, and Mr. Edwin Saunders has contributed £5. Nearly £300 is still required to liquidate the debt, donations towards which object will be gratefully received by the Treasurer, Mr. S. Lee Rymer, Croydon.

THE NEW DENTAL HOSPITAL.

INAUGURAL DINNER.

In commemoration of the opening of the new Dental Hospital, in Leicester Square, a public dinner was held at Willis's Rooms on the evening of the 12th inst., when a very large company of gentlemen—nearly two hundred—assembled to do fitting honour to the occasion. The Chairman of the evening was CAMPBELL DE MORGAN, Esq., F.R.S., who was well supported by influential gentlemen connected with the Profession; and by the following (among other) invited guests: The President of the Royal College of Surgeons, T. B. Curling, Esq., F.R.S.; Sir William Fergusson, Bart., F.R.S.; Sir J. Ranald Martin, C.B., F.R.S.; Sir Charles M'Grigor, Bart.; Fred. Le Gros Clarke, Esq.; the President of the Pharmaceutical Society, Thomas Hyde Hills, Es.q,; Messrs. Harry Leach, H. M. Phillips, Murray, Stone, Trimmer, Christopher Heath, &c., &c.

After the actual dining part of the proceedings was over, the CHAIRMAN rose to propose the usual loyal and constitutional toasts. He first proposed "Her Majesty the Queen," remarking that the Queen was universally beloved, and not only herself, but her offspring; for they had seen that day how loyally had the Queen's new daughter, the Russian Princess, been received by the English people. (Cheers.) He then proposed, "The Prince and Princess of Wales, the Duke of Edinburgh and the Grand Duchess, and the rest of the Royal Family:" and afterwards, "The Army, Navy, and the Reserve Forces." With regard to the Army, he remarked that English soldiers had always given proofs of their valour, and in the Ashantee war, just concluded, they had shown their indomitable bravery. As long as Englishmen were Englishmen, the Army would be prominent for its courage and bravery. As to the Reserve Forces, they had the making in them of good soldiers, and when necessary would no doubt prove their valour. He coupled with this toast the name of Captain Sercombe, a gentleman who had been energetic in bringing to completion the great work they then met to commemorate. (Cheers.)

Captain SERCOMBE responded, thanking the Chairman for the eloquent manner in which he had proposed the toast, and the company for the enthusiastic manner in which they had received it. With regard to the Army, he mentioned that not the least glorious department was the Medical Service, members of which occasionally evinced a calm and determined courage, even of a higher order than that of the men who rushed into the breach; and he hoped the day had come, as we were now entering upon a new political *régime*, when the services thus rendered by military surgeons would be more appreciated. He trusted, indeed, that they would see this branch of the Army and Navy more honoured than it had been. (Cheers.)

The CHAIRMAN said that the toast he was about to propose—"The College of Surgeons"—would be received, he was sure, most warmly. When the first steps were taken to place the Dental Profession in the position which it now occupied, a great deal depended upon the co-operation of the College of Surgeons. (Cheers.) He did not mean to say that without that co-operation they would not have been able to do what they had done; but they would not have been so successful. The College, however, co-operated willingly, and granted all that they asked, and acknowledged them as belonging to their own body; and he knew well that their feelings were deeply engaged towards the College of Surgeons for this action on their part. (Applause.) Their co-operation was perhaps rather slow to admit change; but they saw in this case that there was an advantage to be derived by the Profession, and they aided most willingly. That night they had the honour of the presence of the President of the College of Surgeons—(cheers)—who well deserved the fine character and reputation which had led him to be elected to that position. They were that evening only too happy to recognise Mr. Curling as Presisident of the College of Surgeons; and not merely as President of the College, but also in connection with their new building. Leicester Square was singularly connected with odontology by the distinguished Hunter, whose works they were all familiar with. When Baron Grant purchased up that fearful eye-sore and disgrace to London—the interior of Leicester Square—he proposed to erect statues of four great men who had been associated with the Square; and not finding a fourth who was directly connected with the Square, he selected Dr. Johnson, as a man who had done so much for the English language. Dr. Johnson, however, was not connected with the Square, while John Hunter, in his way as great a glory to England as Dr. Johnson, lived in the Square, and was connected with it. (Applause.) The President of the College of Surgeons no sooner saw this oversight, made doubtless through ignorance, than he sought to get it remedied by placing there Hunter's statue; and they owed it to Mr. Curling that they should have a statue of the first writer with regard to teeth placed in the Square where they had placed their new Hospital. (Cheers.) In conclusion, he asked them to drink the health of the College of Surgeons, and especially of its President, for the good he had done in this domain, Leicester Square. (Applause.)

Mr. CURLING (who was received with acclamation) thanked them for the handsome manner in which they had received the last toast. He highly applauded what they had done in regard to the erection of this new hospital, which would enlarge and improve the education of students, and thus raise the status of the profession. The

Chairman had alluded to some efforts of his in connection with the statue of John Hunter, and there was a special appropriateness in placing that bust near this Dental Hospital, as they could not fail to be impressed by the effigy of that great man who had done so much towards the study of scientific treatment of the teeth. (Cheers.) Notwithstanding later writings on the subject, no one could refer to Hunter's works without instruction and delight. The College of Surgeons had taken great interest in the prosperity of the Dental Hospital. They knew how it would tend to relieve the sufferings of numerous people, and they looked upon it as a means of improving the education of students, and thus doing a great deal of good. On all grounds he looked upon this as a great day in the annals of that branch of the profession. (Applause.)

The CHAIRMAN then said: Gentlemen, I have now the honour of proposing the toast of the evening, as we may call it. We are met here to-night to commemorate an event of the greatest importance to the profession in which we are engaged. I would that there were some one here to do the subject justice; but let me mention one thing to you. I was entrapped, inveigled by one of your number, who told me that this was to be a small social gathering connected with the Hospital. (Laughter. In an unwise moment I yielded, and I see before me the grand assembly met here to-night. It is now twelve or thirteen years ago since at the instigation of a gentleman whom I must name--my friend Mr. Tomes—(loud and continued cheering)—I am glad I mentioned his name,—that this movement began, and as I was conversant with the general working of an hospital, wanted me to join it, and I did so with pleasure, and from that time to this I have been associated with the Hospital, and have seen all that has been going on in it. I take very great interest in the movement. Fifteen years we have been going on with the old building, but we have outgrown it, and the new Hospital was a necessity. We wanted a suitable building, and had to remove from a place not altogether suited to our purpose. Through the energy of one gentleman who, although senior in the profession, has all the activity and vivacity of youth, the building which we now occupy was discovered in a wretched, dilapidated condition. I confess that when I saw it myself for the first time my heart misgave me, and I think without the then foresight of this gentleman and those associated with him in discovering what were its capabilities for our purpose as a Dental Hospital, we should not have been successful; whereas we have now at a comparatively small expense, a hospital as admirably calculated for the purpose for which it is intended as it could well be. (Cheers.) Perhaps had we done as we should have liked we should have purchased new ground, built a new place, and have been saddled with a debt of something like £20,000, but I do not think it would have been quite justifiable to go upon that tack. I think we acted prudently in getting what turned out to be a most admirable building, which we get at a comparatively small expense. (Cheers.) The square is now one of the best sites in London. I think we owe our success to Mr. Saunders. (Applause.) You can well appreciate what that gentleman has done—the time, money, exertion—indeed every kind of general superintendence has fallen upon his shoulders. He has been aided, no doubt, by a most admirable building committee, who have taken a great share in the working up of the establishment, but still to him we are indebted for being where we are to-day, for I am sure if it had not been for his determination, the scheme would have fallen through, which would have been a thing much to be deplored. There are many who would have been glad to see the position we are in to-day—those who laboured with us in earlier times, and we cannot but regret that time has run on and taken them from us; but still we have amongst those who are coming on many of our old students at that time, and who owe their position now in a great measure to the Hospital. It is gratifying to find that we are not so selfish as some people suppose, for here we find gentlemen occupying a high position, making men who would otherwise be ill-trained, as learned and as skilful as themselves. You have preferred the honours of the profession rather than any pecuniary consideration, and you have by that means raised the profession and created for it a high and honourable position. (Cheers.) I think there is great cause for the highest degree of satisfaction in all that has taken place in reference to this Hospital. I may say I am proud to have been connected with it, but I could still have wished that it had not led to my being here. (Laughter.) You must let me, then, propose "Success to the Dental Hospital," coupling with it the names of the building committee, and especially the name of a gentleman, Mr. Saunders, whose help you will appreciate to-day, not merely because of what he has done for you, but because your own personal esteem will lead you to do honour to the recurrence of his birth-day. (Cheers.) What his age is I don't know, but he has always been and always will be young, and the older he gets the younger he looks.

The toast was received with acclamation.

Mr. SAUNDERS said: I hope, Mr. Chairman, that giving you the occasion of advocating the cause of our Hospital in such eloquent trems will enable you to forgive the deception I have practised upon you, which I assure you was not intentional, although I should not have hesitated to practise it even if I could have foreseen so large a gathering It is peculiarly gratifying to me to find this response to the toast of the Dental Hospital, feeling as I have always done, and always shall do, a great interest in it. (Cheers.) My own feeling of thankfulness at our success is such that my heart seems ready to burst out in a sort of secular *nunc dimittis.* Our Profession, it seems to me, has been too much looked down upon and under a cloud. In the earlier years of my career I did not feel particularly proud of the Profession, and I have often asked myself why it should be so, and I resolved that before my career terminated I would endeavour to do something to elevate it in popular estimation. It is not so long since, barely thirty years, we were unknown to each other. Our Profession was in a state of chaos. It was without form and void, and darkness was upon it; but there was a movement at that time which took the thoroughly English form of a series of dinners, originating in a house of great traditions connected with our profession, 32 Old Burlington Street—(cheers)—traditions which are still in safe hands, and which, I trust, will be handed down to many a generation yet. Well, gentlemen, the first discovery we made by these agreeable means was that we were not such a set of monsters after all. We were astonished to find that there were in our Profession educated, refined gentlemen, kind-hearted and most agreeable companions, and we resolved from that time to form some bond of union amongst ourselves where matters connected with the science and practice of our profession could be discussed, and this resulted eventually in the establishment of the Odontological Society, where we had our museum, our library, our transactions, and our journals; and then we began to consider that we had not yet fulfilled our duty towards suffering humanity, and we organised a system of relief to the suffering poor, in connection with which we had a school, and we have gone on from that time to this enlarging, and improving, and developing our institutions, until at last it became apparent that we must enlarge the scene of our labours. (Cheers.) About eight or nine years ago I saw these dilapidated ruinous houses in Leicester Square, and I longed for their possession, because they had what we required—a free unobstructed light, an open space, and a northern aspect. It was certainly a most unpromising neighbourhood, and the houses might have formed the subject for one of Dickens's ghost stories. To speak in Johnsonian language, notwithstanding their ruinous dilapidated appearance, there were potentialities of goodness and convenience in them; and the subject was brought before the committee. We had, however, a long lease of the house in Soho, and we were not in such flourishing circumstances as would justify us in entering upon new premises. Time went on, but I never neglected this matter, and from time to time brought it under the notice of the Committee. At length, after much dissusion, a favourable decision was arrived at, when a new discouragement arose in the opposition which showed itself where only co-operation and support might well have been expected. To some extent this opposition was due to a disinclination to change and a want of appreciation of the advantages of the new site; but with others it was so persistent and altogether unreasonable as almost to make us sympathise with Dr. Johnson, who told a man whom he failed to convince, "Sir, you must have taken great pains with yourself, because you could not have been born so stupid." All obstacles, however, have been overcome, and we have the satisfaction of presenting this day to the Committee, a building as perfectly adapted for the purpose as a building could be, and free from all debt. (Cheers.) We are all greatly indebted to the gentlemen who have been associated with me—Mr. Tomes, Captain Sercombe, Mr. Hills, and Mr. Parkinson. We had the sage counsel and mature experience of a Tomes, the unflagging energy of a Sercombe, the sterling good sense of a Parkinson, the thorough business qualities of Mr. Hills and Mr. Ash, and the prudence of our excellent friend the Dean—(cheers)—and with such a combination I think we may point with satisfaction to the result as seen in the building to which we have been inducted this day. (Applause.)

Mr. CARTWRIGHT proposed, "The Health of the Visitors," coupling with it the name of Sir W. Fergusson, who had always proved himself to be their friend. At the same time he (Mr. Cartwright) took the opportunity of repudiating any idea of opposition to the scheme for a new Dental Hospital, so far, at any rate, as he himself was concerned.

Sir W. FERGUSSON responded, speaking in high terms of the Hospital and the good which it must be the means of doing. There had been a great development in the Profession of late, and its members had improved in regard to the extension of their knowledge and the greater perfection of their skill. He expressed his admiration of the manner in which they had worked to place the science of dentistry on that high pedestal which it now occupied. (Cheers.)

Mr. TOMES, who was received with great applause, said that they were under a great obligation to a friend of his, Mr. C. de Morgan, who had done a great deal for them, and whose health he asked them to drink. (Cheers.)

The CHAIRMAN briefly responded to the toast. He said that nothing could be more gratifying to any one connected with the hospital than to see such a gathering as that.

Mr. PARKINSON spoke on behalf of the Dinner Committee, remarking that it had given him great pleasure to assist that evening; and he was pleased with the success which had resulted.

Mr. MUMMERY proposed the health of an anonymous benefactor, who had given £120 to the hospital. He (the speaker) hoped this worthy example would be followed.

Mr. CARTWRIGHT proposed the health of the medical officers, coupling with the toast the names of Mr. Underwood and Mr. Charles S. Tomes.

Mr. UNDERWOOD briefly replied.

The proceedings of a very agreeable evening were then brought to a conclusion.

The musical arrangements were under the direction of Mr. Jekyll, assistant organist of Westminster Abbey. The grand pianoforte was kindly lent by Messrs. Broadwood, free of charge.

NEW DENTAL HOSPITAL, LEICESTER SQUARE.

To the Editor of the "Monthly Review of Dental Surgery."

Sir,—I have the pleasure to announce the following contributions to the Dental Hospital Building Fund, received since your last issue.

Very faithfully yours,

41 Brook Street, W.

Edwin Sercombe, Treasurer.

	£	s.	d.
Amount already received	3,310	10	6
His Grace the Duke of Bedford	50	0	0
Grocers' Company	25	0	0
Cutlers' Company	10	10	0
W. Cooper, Esq.	5	5	0
Warwick Hele, Esq., Carlisle...	5	5	0
W. A. Hunt, Esq., Yeovil	5	5	0
T. King, Esq., York	5	5	0
Dr. Orphoot, Edinburgh	5	5	0
S. L. Rymer, Esq., Croydon	5	5	0
Rev. Dr. Robbins, per E. Saunders, Esq. ...	5	5	0
J. Steele, Esq., Croydon	5	5	0
Spence Bate, Esq., Plymouth	3	3	0
J. J. Holford, Esq., Orchard Street	3	3	0
C. D. Rogers, Esq., Newbury	3	3	0
W. Morris, Esq., per Milward Harding, Esq.	2	2	0
G. Weaver, Esq., Baker Street	2	2	0
A Friend, per Milward Harding, Esq. ...	1	1	0
George Lyddon, Esq.	1	1	0
A Friend, per F. J. Vanderpant, Esq. ...	1	0	0
Total	3,454	15	6

DENTAL HOSPITAL OF LONDON.

Cases Treated from Feb. 1st to 28th, 1874.

Extractions: Children under 14	340
Adults	467
Under nitrous oxide	173
Gold stoppings	72
White foil ditto	47
Plastic ditto	138
Irregularities of the teeth treated surgically and mechanically	23
Miscellaneous cases	200
Advice cases	29
Total	1,489

Ashley Gibbings, *House-Surgeon.*

APPOINTMENTS.

Ashley Gibbings, Esq., M.R.C.S., L.D.S., to be House-Surgeon to the Dental Hospital of London, Leicester Square, vice Claude Rogers, Esq., M.R.C.S., L.D.S., resigned.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

At the recent Preliminary Examination in Arts, &c., for the Fellowship of the College, the following gentlemen passed :—Alfred Hepburn, G. H. Makins, Aug. Winterbottom.

DENTITION.

About three per cent. of the infant mortality of Massachusetts is attributed directly to dentition. Probably many deaths from other diseases are owing to it indirectly. It seems strange that a physiological process should be the occasion of so much loss of life, and physicians of high standing are not wanting who deny that dentition exerts any special influence in the etiology of children's diseases, considering the supposed cases of this influence to be mere coincidences. Undoubtedly some have rated it too highly, but it appears well established that the child, during dentition, is more obnoxious than at other times to inflammatory affections of the nervous, respiratory, and digestive systems. The influence of dentition in the production of bowel diseases has probably been over-estimated, for this reason, that the follicles of the intestines are developing at the same time that the eruption of the teeth is taking place, and much less powerful exciting causes are necessary to produce diarrhœa than at other times. We also find that teething is more commonly attended with diarrhœa in summer and autumn than in winter. Finally, diarrhœa is a rare accompaniment of dentition in infants reared at the breast. Convulsions are quite often met with during teething, and are attributed to the undeveloped condition of the brain, whence the spinal nervous system, being without the restraining influence of the will, is excited to reflex action by very slight local irritations, in this case by the pressure of a tooth upon the inflamed gum. This affection, too, occurs mostly in infants fed artificially. The increased liability of teething children to cephalitis, bronchitis, and pneumonia is not so easily explained. Vogel, however, perhaps rather fancifully, attributes the bronchitis to the wetting of the clothes over the chest by the saliva, which is so freely secreted at this time.—*J. O. Webster, M.D., before Massachusetts Medical Society. Boston Med. and Surg. Journal.*

METALLURGY.

Some valuable researches on alloys, especially on those of copper and tin, have been conducted at the Paris Mint by M. Alfred Riche, who has recently published his results in the *Annales de Chimie et de Physique.* The fusibility of the alloys was determined by means of Becquerel's thermo-electric pyrometer, with platinum and palladium wires, constructed by Ruhmkorff. The author finds that most alloys of copper and tin suffer liquation at the moment of solidification, and hence it is almost impossible to obtain their true melting points. Exceptions, however, are furnished by those alloys whose atomic constitution corresponds to the formulæ $SnCu^3$ and $SnCu^4$; these alloys are not liquated, and the former of them possesses peculiar properties, differing in colour, for example, from all others of this class. Tempering increases the density of bronzes rich in tin, and annealing diminishes the density of tempered bronze. Whilst steel is hardened by being suddenly cooled, bronze is softened by this treatment. Yet the bronze is not sufficiently soft to be readily worked; and it has long been a vexed question how the Chinese manage to work their tam-tams and other instruments of bronze. Experiments made many years ago at the Ecole des Arts et Métiers, Chalons, showed that such objects might, though with much trouble, be wrought in cold-tempered bronze; but the process was too difficult to be employed industrially. It was afterwards asserted by St. Julien that the Chinese worked their bronze at a red heat; yet it was difficult to understand this, since bronze is extremely brittle at high temperatures. M. Riche appears to have settled the difficulty by showing that although bronze cannot be readily worked either cold or a bright red heat, yet it is easily manipulated at intermediate temperatures. Taking advantage of this fact, M. Riche and M. Champion have succeeded in imitating the Chinese tam-tams.

With respect to unalloyed copper, Riche finds that its density when alternately submitted to mechanical treatment, tempering and annealing, is variously affected, according as the metal is protected from or exposed to access of air; in the former case the mechanical action increases, and in the latter case diminishes the density. The introduction of a small proportion of iron gives considerable tenacity and hardness to copper. The author has also studied a number of alloys of copper and zinc.

LAW INTELLIGENCE.

(*Wakefield Express*, Saturday, February 28th, 1874.)

Mr. John Mitchell, dentist, of Kirkgate, sued Mr. John Johnson, cabinet maker, of Market Street, for £6 5s. for an upper and lower set of teeth supplied to order to Mrs. Johnson.

Mr. Quiggin for the defendant.

Plaintiff said he made a set of teeth for the defendant for which he paid £1 5s., leaving a balance of 6s., which had been paid into court. His wife then came and ordered a double set. When she had got used to the upper set she had the set for the lower jaw, and the charge was reasonable.

Cross-examined: If they don't fit I don't charge. She brought them back when I was not at home. I cannot tell why she brought them back. When she left them she said she would call again, but she never did. She came and had a little alteration to them; she came two or three times and had them altered. I sent them home last time by a boy. He didn't bring me word back that Mrs. Johnson would not have them because they did not fit. The £1 5s. was paid before the bill was sent in for the present sets. I have charged interest on the debt.

Mr. Quiggin said the prices for the sets were £2 5s. and £2 10s. and they were returned because they didn't fit, in which case, according to the plaintiff's own admission, no charge was to be made. As to the interest, there was no agreement to that effect, and the defendant had no notice of it.

His Honour said the interest could not be recovered under such circumstances.

Mrs. Johnson said she went backwards and forwards to the plaintiff's for three months—sometimes several times a week, and it was impossible for her to wear them—they were such a bad fit. She had had other sets made since by Mr. Carter, of Leeds.

Plaintiff: She kept them six months and then returned them. Didn't you have the upper set ten weeks and then come for the lower set?

Mrs. Johnson: No.

Plaintiff: It is false.

Mr. Carter, dentist, of Marsh Lane, Leeds, said: Mrs. Johnson came to me about these teeth, and I remarked that the workmanship was shamefully done.

His Honour: What set was it?

Mrs. Johnson: I showed him these teeth; I had no others.

Mr. Carter: I told her it was impossible for them to be worn. They had made her mouth sore. I told her to get the sets made again. They required new work entirely. The plates did not fit. There was no workmanship at all about them.

Cross-examined: It was about two years and a half ago. She had the teeth in her mouth. It was in July, 1871.

The Plaintiff: I had the teeth then, and had had them for two months.

Mr. Carter (to Mrs. Johnson): I gave you a receipt when you paid me for the teeth I made you.

His Honour told the plaintiff, as he had the teeth, he should have produced them in court.

Plaintiff produced another set, but his Honour said the court had nothing to do with other work, and it was evident that the teeth in question were not good teeth.

Plaintiff: She said herself the upper set were right.

Verdict for the 5s. paid into court.

To Correspondents.

ALL communications intended for the Editor should be addressed to the care of Messrs. SMITH, ELDER, & Co., 15 Waterloo Place, Pall Mall.

All inquiries respecting Advertisements and Subscriptions should be sent to Mr. GEORGE BUTCHER, 4, Crane Court, Fleet Street, E.C.

THE MONTHLY REVIEW
OF
DENTAL SURGERY.

No. XI. APRIL, 1874. Vol. II.

STAPHYLORAPHY.

The method recently introduced by Sir William Fergusson, and published in the *British Medical Journal*, for the treatment of perforations, or clefts of the hard palate, is of peculiar interest to the dental surgeon. Whilst the soft palate has been amenable to surgical treatment, the hard palate has baffled all skill, at any rate in the more severe forms of congenital deformity of the palatine processes of the maxillary bones. The difficulty of bringing two surfaces together, that were kept separated on account of the bony structure on either side of the gap has been overcome by a plan that for fearlessness and novelty is thoroughly characteristic of the eminent surgeon who has introduced it.

Sir William Fergusson perforates the hard palate and opens up a cleft right into the nares on each side of the gap in the median line, the opening being made parallel with the margin of the original space. The continuity of bony structure then being broken down, the margins of the central cleft can be brought into contact, and bony, or at least strong fibrous union obtained, the smaller cleft at each side becoming filled up with granulations or new bone. One of the most difficult processes connected with the treatment of cleft palate by surgical means has thus been solved; but it must be borne in mind, though union may be thus obtained, symmetry of outline does not necessarily follow. Nor does a soft palate united perfectly in the median line always improve the speech when (as happens in most cases) the palate is shortened by cicatricial contraction.

DR. KINGSLEY'S OBTURATORS.

We regret that in our notice of the *conversazione* held at the New Dental Hospital we omitted to mention (amongst the objects of interest exhibited) Dr. Kingsley's new pattern artificial vela. These, with the castings used for their production, were shown by Mr. J. S. Turner, and their manipulation explained to a number of visitors during the evening. It is hardly necessary to say that these beautiful specimens of workmanship elicited on all hands the most unqualified approval,

ON THE

MICROSCOPICAL STRUCTURE OF FOSSIL TEETH FROM THE NORTHUMBERLAND TRUE COAL MEASURES.

BY W. J. BARKAS, M.R.C.S.E., L.R.C.P., LONDON.

[*Continued from p.* 445.]

CTENOPTYCHIUS (*continued*).

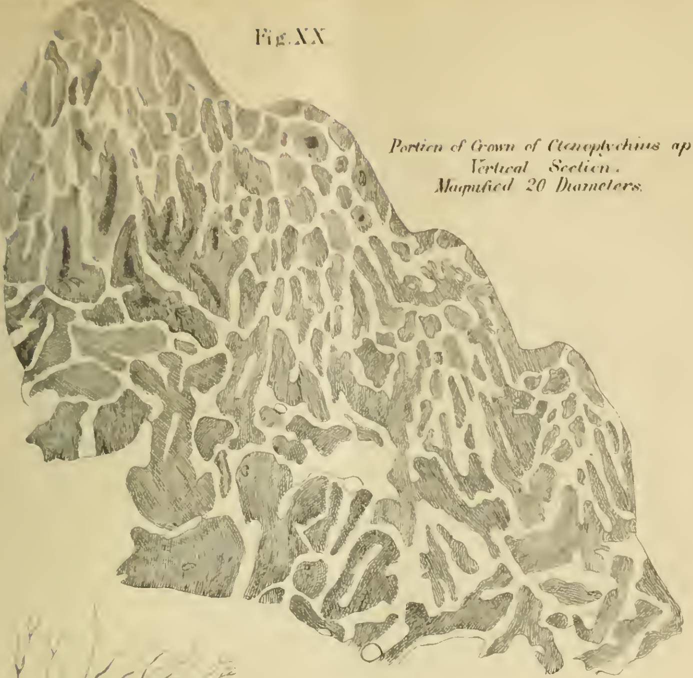
THE minute structure of C. apicalis differs considerably from that of C. pectinatus and C. denticulatus, so much so, in fact, that they appear to agree in one point only, that is, in the largeness of the medullary canals in the base. Agassiz, in referring to the structure of C. denticulatus, remarks that it is similar to that of the teeth of Ctenodus, and leaves us to infer that the remaining species of Ctenoptychius had similar histological characters; but when I come to describe the teeth of Ctenodus it will be seen that there is not any similarity between the structure of those teeth and C. denticulatus and C. pectinatus, and that they agree with C. apicalis only in having rather large and freely branching canals; but in the number and arrangement of the canals, and in the quantity and the structure of the tissue in the interspaces, they are distinctly different.

C. apicalis is composed wholly of vascular dentine, not having an external layer of unvascular dentine over the denticular surface, as in the first two varieties. The osteo-dentine of the crown is continuous with that of the base, but is denser, on account of the decrease in the size of the canals and of the great increase of calcigerous tubules in the intervening tissue. The canals are patent at the lower extremity of the base and also on the external surfaces of the crown; the latter openings are the cause of the minute pits observed on those surfaces.

In the base of the tooth the canals are very large, branch and anastomose moderately, but not to such a great extent as to render the course of the main canals indistinct; they run vertically to the axis of the tooth and to each other; the branches are about the same diameter as the canals from which they spring. In their course the canals become fewer in number and smaller in calibre, but are everywhere larger than those in the crown; the decrease in number and the smaller size of the canals, without any diminution of the size of the base, cause a predominance of homogeneous tissue in its upper part.

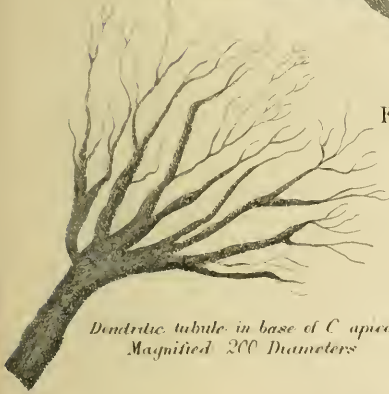
In the crown the canals are much smaller than in the base, the decrease in their diameter taking place immediately above

Fig. XX



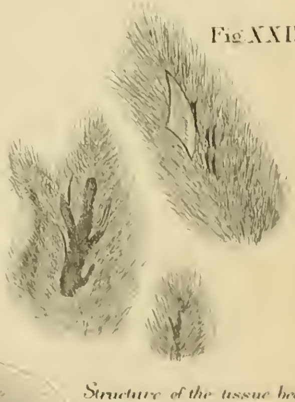
Portion of Crown of Ctenoptychius apicalis
Vertical Section.
Magnified 20 Diameters.

Fig. XXI.



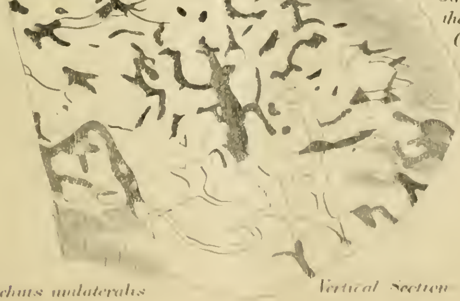
Dendritic tubule in base of C. apicalis
Magnified 200 Diameters

Fig. XXII



Structure of the tissue between the canals in the crown of C. apicalis
Magnified 80 Diameters

Fig. XXIII



Crown of Ctenoptychius unilateralis *Vertical Section* *Magnified 20 Diameters*

T. Bessent lith. 29 Essex St. Strand

the junction of those two parts; in their course from this point to their termination at the peripheral surface there is no marked diminution of their calibre; they branch and anastomose exceedingly freely, forming a kind of coarse network; the branches being quite as large as the main vessels; it is thus impossible to define the course of any one canal, though the general tendency is vertical (Fig. XX.). The free branching of the canals and the large size of the branches give to the crown an appearance of being permeated by an increased number of canals. The crown is distinctly separated from the base by the sudden decrease in size of the canals at the junction, by their apparent increase in number, by the different appearance presented from the excessively free manner in which the canals in the crown branch and anastomose so as to form a network, and by the preponderance of tissue over canals in the upper portion of the base.

The tissue situated between the canals in the base and in the crown of this tooth is as distinctly different in structure from that of the preceding two varieties as we have seen to be the case in the arrangement of their vascular canals and in their external characteristics. The tissue in the base is homogeneous, and that portion of it immediately surrounding the canals is arranged in concentric laminæ; these laminæ are darker in colour than the remainder of the tissue, so that the interspaces between the canals present two semi-opaque portions and an intermediate clear portion. This tissue is freely permeated by large dendritic tubules, which arise at right angles from the vascular canals; these tubules are certainly dendritic, for they spring by a large trunk which proceeds a short distance and then divides freely into branches (Fig. XXI.), these branches subdivide and spread out, and give a tree-like appearance to each primary tubule; the branches anastomose with each other and with those of neighbouring systems. The tubules at their origin vary in size from one-one-thousandth of an inch to one-five-thousandth, Fig. XXI being of the larger diameter. The terminal branches from these dendritic tubes are comparatively large, averaging about one-eight-thousandth of an inch, and are in some parts very numerous, filling the tissue with an open black network. All the tubules and their branches in the base of the tooth are filled with a dense black material, which seems to make them solid and compact, for a very thin section causes them to disappear to a great extent.

Each portion of dark tissue in the crown, situated between the canals observed in Fig. XX. has the appearance, under a high power, of a loose pellet of shredded cotton-wool stained brown, the tissue being composed of a great number of exceedingly fine, almost transparent, wavy calcigerous tubules, interlaced among each other in an intricate manner (Fig. XXII.). This structure is similar to that in the tooth of Cestracion Philippii, a drawing of which is given by Professor Owen in his "Odontography," Plate 13; and in Plate 21 is an excellent engraving of the minute structure of Psammodus, which has even a more close resemblance, for in Psammodus and C. apicalis there passes up the centre of each mass of tubules a single canal, from which spring directly the numerous calcigerous tubules.

Microscopically there is, therefore, quite as distinct a difference between the structure of the base and the crown as was observed in examining those parts of the tooth externally; the line of junction of these two varieties of tissue coincides with the external evidences of the junction of the crown with the base.

Ctenoptychius apicalis, we have now seen, differs almost entirely from C. pectinatus and C. denticulatus, both in its internal and external characteristics. I am therefore disposed to doubt the propriety of its being classified among the Ctenoptychii, especially when I find that Agassiz thus classified it after the examination of one surface of a single tooth, and without having observed its minute structure. The external appearances are more nearly allied to Petalodus than to any other tooth I am acquainted with, and I have just had the opportunity of examining four teeth from the Staffordshire Coal Measures that I consider to be Petalodi, the crowns of which resemble the crown of C. apicalis and somewhat that of Petalodus serratus, and the bases are similar to the base of the latter tooth, but are quite unlike the base of the former. The minute structure of C. apicalis and the teeth I have observed from Staffordshire are alike, and if the microscopical appearances of Petalodus described by Professor Owen be correct (as I hope to be able to show to be the case when I speak of that genus), then C. apicalis and the Staffordshire teeth are undoubtedly Petalodi.

Ctenoptychius unilateralis was first described and figured by Mr. T. P. Barkas, F.G.S., in the *Geological Magazine* for January, 1869. It is very rare, but not so much so as C. apicalis, and so far as I know, it has only been discovered in these Measures. It differs externally from all the preceding varieties with respect to the position of the base, which is situated on one side of the crown instead of at the lower border. The specimen from which Fig. XVI. was drawn is a very typical tooth, and is about the average size, though I possess some measuring less than half the length. The teeth having this peculiar lateral base vary much in form, but whether these varieties belong to one fish, though situated in different parts of its mouth, or pertain to distinctly different fishes, I cannot say. Fig. XVII. is an example of the variation of form. This tooth was classified among the Ctenoptychii on account of the resemblance between the external characters of its crown and those of the crown of C. pectinatus, for if a short base had been attached to the inferior border of the crown of C. unilateralis instead of to the side it would have closely resembled the former tooth; the serrations are, however, not quite so deep in this new variety.

The crown is separated from the base on the external surface by a vertical concavity, and on the internal by a prominent ridge; the base exceeds the crown in length, and gradually tapers to a point as it proceeds outwards, but the latter is the higher of the two parts.

The crown is a thin plate, compressed laterally and recurved inwardly; the superior border is sharp, finely serrated, and convex antero-posteriorly; the inferior border is the thickest portion of the crown, it is rounded, smooth, concave from before backwards, its basal extremity is twisted, and proceeds obliquely upwards and outwards along the internal surface of the base, it is this ridge which divides the base from the crown; the external surface is very convex from above downwards, and less so antero-posteriorly, it is smooth and glistening, has a slight horizontal groove running along the centre, and on its upper portion it is faintly grooved in a vertical direction, the grooves being continuations of the serrations on the superior margin; the internal surface is concave from above downwards and from before backwards, the latter concavity being most marked where the inferior margin curves up between the crown and the base, it is smooth and glistening, and is vertically grooved for a very short distance down its upper portion.

The lateral prolongation or base is also compressed laterally, but not to the extent noticed in the crown; it is consequently thicker. The direction pursued by the base varies in different specimens; generally it is continued parallel with the crown, but in a few cases it is curved upwards (Fig. XVII.), the curve commencing in a different portion of the base in most of these peculiar varieties. The internal and external surfaces are convex from above downwards, and are smooth and shining. The superior and inferior margins are sharp and smooth.

The microscopical structure of this tooth differs somewhat from the preceding three varieties, but has more points of resemblance to C. pectinatus and C. denticulatus, than to C. apicalis.

It is composed of vascular and unvascular dentine. The unvascular dentine covers the whole of the denticular surface of the crown and the external surfaces of the coronal end of the base. The vascular dentine is contained within the layers of unvascular dentine, and is continued along the centre of the base nearly to its distal extremity, and tapers to a point in a direct ratio with the tail. The unvascular dentine is a comparatively thick layer, and the sum of the thickness of the layers on the internal and external surfaces of the crown is nearly half the thickness of the crown itself, which is one-twentieth of an inch; it is permeated freely by fine calcigerous tubules, which spring from the vascular canals running along its internal surface and pass to its extreme periphery. The tubules are rather fine, measuring from one-five-thousandth to one-ten-thousandth of an inch in diameter at their origin; in their course, which is vertical to the superficies, they are slightly wavy, branch freely, but always dichotomously; the branches are given off at an acute angle. The primary branches are slightly smaller in diameter than the tubules from which they spring, but the branches near the periphery are exceedingly fine, though distinctly visible under a power of eighty diameters. The unvascular dentine in the coronal extremity of the base is similar to that in the crown, but as it proceeds outwards it becomes modified in structure. This modified dentine is very dense, and is permeated by a greater number of tubules, which are shorter and more wavy than in the unvascular dentine proper. The vascular dentine does not enter into the composition of the tooth to the extent observable in other Selachian teeth, for it only forms half the thickness of the crown, and is continued along the centre of the base; it is surrounded on all sides by unvascular dentine, except at the inferior border of the crown, and is very moderately supplied with vascular canals in comparison with the vascular supply in the other varieties of Ctenoptychius; its structure is therefore much denser. The canals in the crown are patent at the inferior margin, and from that border they proceed as a rule in a direction parallel with the vertical axis; in their course they give off a few branches at about a right angle, which anastomose with neighbouring branches; they gradually become smaller in diameter as they approach the superior border. Wherever a branch is given off the canal becomes dilated at that point, and the same thing occurs when one branch anastomoses with another. At the internal surface of the unvascular dentine the canals apparently terminate in two ways, either abruptly, with a dilated extremity, of which the calcigerous tubules passing into the unvascular dentine appear to be minute continuations, or the canal divides and anastomoses with similar branches from the neighbouring systems; in this case the tubules spring from the loop thus formed. Calcigerous tubules are given off by all the canals, but they are more numerous where dilatations occur, this tends to give a clustered, but not a fasciculate appearance to the tubules. The tubules are fine, and about half the length of those in the unvascular dentine, but in their method of branching and anastomosing they are similar to the calcigerous tubules in that tissue. The substance between the canals is quite homogeneous, and not laminated. The vascular canals in the base are continued from those in the crown, and the vascular dentine of the former agrees in every respect with that of the latter portion of the tooth.

The structure of the crown of this tooth does not agree in any one particular with that of C. apicalis, but there are many points of resemblance between it and the crowns of C. pectinatus and C. denticulatus, for they all have a layer of unvascular dentine covering the whole of the external surface, in which the tubules proceed to the extreme periphery, but the tubules differ in being fasciculate in their arrangement, and larger in diameter in the two latter varieties, while they are not so in the former, and in all the medullary canals in the vascular dentine branch and anastomose, and the canals are dilated where branching or an anastomosis takes place, they also run parallel with the axis of the tooth and with each other, but in C. unilateralis the canals are considerably fewer in number, and give off a greater number of calcigerous tubules. The structure of the bases of these teeth cannot be compared, for the base of C. unilateralis is altogether unique in position and external characters, differing in this particular from the teeth of all other fishes, whether recent or extinct. The arrangement of the teeth of C. unilateralis in the jaw is not known, and I have great difficulty in determining any manner by which they could be arranged so as to present the crushing border of the crown in such a position as to enable it to perform its office. The only method that it appears to me can be adopted with any degree of probability is as follows: The teeth were probably situated in a longitudinal groove on the upper border of the jaw, the largest teeth being placed in the centre and the smaller, anterior and posterior to them, and it may be that these smaller teeth had the peculiar form shown in Fig. XVII. If the teeth were planted in the groove with their long diameter from before backwards, the tail being most posterior, the first tooth being thus placed, the second would be arranged with the concave border of the crown overlying, or articulating with the tail of the first, which might be partially buried in the cartilaginous substance of the jaw; the remaining teeth being continued in the same manner.

This arrangement would give a certain amount of mobility to each tooth, and the fish could cause them to lie with an inclination towards the interior of the mouth when it was at rest, or to stand erect when it required to seize or crush its food. It is not probable that the teeth were arranged with the long diameter laterally, for then the breadth of the jaw would be comparatively enormous, considering the small number of teeth it would contain.

ON THE ATTACHMENT OF AN AUTOMATIC MALLET TO THE MORRISON BURRING ENGINE.

By WARWICK HELE, L.D.S., Carlisle.

In February of last year I adopted the Morrison engine, and quickly perceived that its power might be arranged for the purpose of packing and finishing gold-foil stoppings. Indeed, the perfection of the instrument for the many offices it is called upon to perform, has suggested to most practitioners that its value would be completed by the attachment of an automatic mallet.

Having given some study to the production of such a mallet, I venture to give my twelve months' experience, or rather the results of that experience, hoping that by so doing I shall render some service to the profession, although I am somewhat late in the field, seeing that in the last issue of *The Monthly Review of Dental Surgery* there appears an advertisement respecting "the new burring engine (patented), improved and rendered complete with an automatic mallet." Of that invention I have no further knowledge, hence my observations can apply only to the attachment of an automatic mallet to the Morrison engine, as I have had in hand, and to the practical value of such an invention.

Description of mechanical appliances is always facilitated by reference to working drawings, but as a number of illustrations would be required to demonstrate the progress of my invention, I shall produce none for this purpose. No further use than the present service would be gained by trespassing on the liberality of the editor. However, the sectional drawing at the conclusion of the paper is of the mallet as perfected for attachment to the Morrison engine in general use, and will probably be of value to those who desire to have such a mallet.

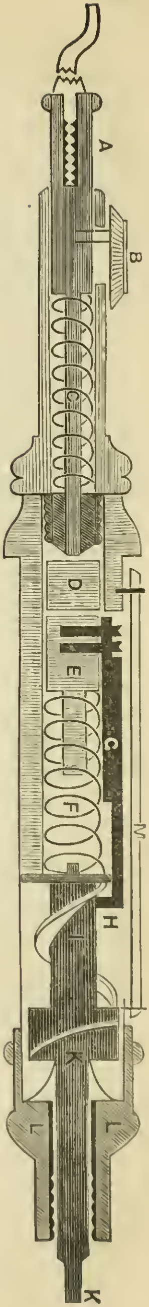
The problem to be solved was "how to convert rotatory into percussive power." This has been done in so many machines, that at first sight the task seemed easy.

The first suggestion for the application of the principle for our purpose appeared in the escapement action of a sewing machine, whereby rotation is converted into an ascending and descending movement, as shown by the action of the needle. The feed motion of the same machine suggested how that sufficient gold foil might be carried forward synchronously with the descent of the stopping instrument. Hence a drawing was made of a new hand-piece, to be constructed so as to screw upon the carrier of the Morrison engine, and to contain the machinery of the mallet. It in brief was as follows: A cylinder slightly larger than that of the regular hand-piece, with a wheel attached, the axis of which was placed at right angles with the course of the cylinder. This wheel was an inch in diameter, and was rotated by two rose pinions directly actuated by the spring spindle of the Morrison engine. Upon the face of this wheel a pin was secured, which played in a slot on the end of the tool carrier. The tool carrier slid between parallel ways, and projected the plugging instrument out of the end of the cylinder. By a part rotation of the wheel, its pin lifted the tool carrier, and by the completion of rotation, the tool carrier was projected, thus converting rotatory into backward and forward motion. The feed was contrived to be automatic by an eccentric driving a lever foot forward, which thrust out the gold foil or pellets (stored in a tube sealed upon the cylinder), so that a portion was carried in by each descent of the plugging instrument. The whole appliance was a pretty combination of wheels and levers, having a most fascinating appearance for the inventor, but performing no useful office. Its application was open to the serious drawback that unless the operator's hand moved backward with the forward stroke (which really rendered the action abortive), the sudden impact of the stopper upon the bottom of the cavity, or against the piled gold, arrested the action of the pin in the slot of the tool carrier, hence "a smash up" occurred. It became evident that the simple conversion of rotatory into forward and backward motion was insufficient, and altogether unsatisfactory; moreover, the use of a feed motion was proved to be unsound in principle, by the tendency of the gold to become damp in the tube, and sullied by the contact of the oil, which was necessarily applied to the machine for the smooth working of its parts.

The details of the movement then adopted need not be described more particularly than to say, that during the rotation of the wheel a spring was thereby condensed, but that on the completion of the revolution, the escape of the pin out of the slot of the instrument carrier—altered for this action—liberated the spring, which suddenly resumed its full dimension, and in so doing projected the stopping instrument with considerable violence. The force of the percussion thus developed was placed under the immediate and perfect control of the operator's finger by the further adoption of the principle of adjustment involved in the application of the spring and guides of the Impactor, described in the *Monthly Review of Dental Surgery*, vol. i., page 301. This automatic mallet attachment was successful, excepting that from the size of the wheel the whole appliance was rather heavy and cumbrous.

A friend suggested that the rotation of a screw drawing back a nut attached to the spring, but parting from it on the completion of its retraction, and thus forming an escapement for the spring, might be utilised instead of the wheel pin and slot, thus forming a neater appliance. The difficulty was how to contrive such an escapement without making the whole instrument complicated and liable to disorder; however, a German pea-shooting toy suggested the method, and the adoption of this screw escapement, together with an adjustment for setting the action to one direction of rotation of the fly-wheel, and throwing the screw out of gear, to the other, has made an automatic mallet adjustment for the Morrison engine, which is completed by the attachment of the spring and guides of the Impactor. The whole instrument gives percussion in force and frequency under absolute control, within very wide limits. Now, for its general adoption, may be ranged all the arguments urged in favour of gold-foil malleting as with "spring" automatic mallets, and, additionally, that the frequency and accuracy of the blow are much increased; also, it may be said in its favour that it is saving of hand labour, and that as a finishing, riveting, and burnishing instrument it is unequalled. Against its adoption are the arguments advanced against malleting with spring automatic mallets, and more especially that sound view placed on record by Mr. Henry Sewill, in one of his communications last year to the *Monthly Review of Dental Surgery*, respecting the objections to malleting at all, when, as he says—"In those cases where the teeth are of a chalky nature I find it is almost impossible to avoid injuring the sound tissue bordering on the cavity of decay, and so leaving a state of things well fitted to encourage renewed attacks of caries."

Automatic Mallet Attachment for the Morrison Engine.



A. Carrier for the plugging instrument.

B. Finger-piece or button for controlling percussion.

C. Spring for keeping carrier beyond percussion until thrown into action by the retraction of *B*, which is performed by the pressure of plugging instrument against the filling, and instantaneously arrested at the required degree by counter-pressure from the finger upon *B*.

D. Buffing piston, which when made of steel or hard brass developes a live blow, but when capped with lead developes a dead blow.

E. Mallet head.

F. Main spring playing against *E*, and holding the mallet, so that no action is possible until desired, even if the Morrison engine is rotated in its right direction.

G. The sliding bar, secured to *E*, the mallet head, by a screw and pin.

H. The pin of sliding bar. This is covered with a friction roller for smooth working against the screw.

I. The screw retractor, provided with a drum adjustment fitting against *K*.

K. The spindle, which fits into the socket of the Morrison engine hand-piece, and is provided with a counter-drum adjustment held against that of the screw retractor by a spring, so that they run free if the fly-wheel of engine is reversed. "A throwing out of gear" may be better provided by making the screw retractor play on a square spindle provided with a slight spring for holding it steady only during true revolution.

L. Finishing cap provided with a female screw for attachment of the mallet to the Morrison hand-piece.

M. Finishing cover for sealing the action. On its removal the oiling and cleansing of the parts may be performed.

Operators who have continued the even tenor of their way without turning aside to the attractions of the mallet, will not be disturbed by the advent of a machine more perfect for malleting purposes than has heretofore appeared. The advocates of malleting will not find by its use that they can obtain a vastly improved success in practice. In fact, most will soon weary of that which requires some experience to use, so as to btain as good results as by hand work, and all will find that its applicability is only to certain easily reached cavities, the attachment of the spindle and gear of the Morrison being a preventive to varied reach and position, either towards tooth cavity or gold-foil tray.

In the race of improvement there have been many instruments adopted, taken on faith of the promises of their inventors. Many have not stood the test of time. I believe that the Morrison engine will stand the test of time, but that an automatic mallet attachment will not; hence I have been in no hurry to introduce mine to the profession. No doubt but that it is attractive to an inventor to speak of dental operations, as a recent enthusiastic American writer has, when claiming superiority for steam power in dental operations, &c.—" All I have to do now is simply to stand by my chair and guide my drills or my plugger, as the case may be, in doing which there is no labour whatever;" but a thorough workman who appreciates the highest type of dental art will probably continue to show his appreciation by adopting only those appliances which give increased facility for accurate and delicate manipulation.

The mechanism of the mallet attachment has been manufactured by Mr. Storbeck, of this city, to whom the highest credit is due for the perfection of the workmanship. I am happy to state that the Messrs. Ash have undertaken to supply the Impactor, a guarantee that it will now be in the market. Should the mallet attachment for the Morrison become as popular as the Impactor, its supply will also be vested with their house.

THE ADHESIVE GOLD QUESTION.

BY THOMAS FLETCHER, F.C.S.

IN the *Monthly Review* for March Mr. Palmer goes into this question on data which I hold to be insufficient to prove anything of value. I should like to know if he has, or has not, succeeded in making moisture-tight plugs in teeth with such cavities as he would use adhesive gold for in the mouth.

I would submit, with all due deference to Mr. Palmer, that the question is most distinctly *not* one for theoretical consideration; the process of testing comparative values, as given in the last number of the *Dental Journal,* is both simple and practical. What would be of service would be an acknowledgment that I am correct, or a distinct denial, proved by a proper test; I should rest satisfied with either one or the other. A grain of fact is worth a bushel of theory; and I do not consider myself infallible as an operator.

I would further suggest that adhesive gold is, as a rule, *not* inserted with any excessive amount of force—rather the contrary—and the production of tight plugs by severe operations proves nothing as regards the ordinary use of the material.

As regards glass tubes, I do not wish to suggest their use as a practical test; they were used by me to get a series of comparative values under exactly the same conditions, and so far as their fracture is concerned, any ordinary glass tube will stand an amount of rough usage and hammering which no operator would apply to any of my own teeth with my permission. With reference to amalgam *versus* cohesive gold, I say positively that an amalgam free from shrinkage, or with a trace of expansion, is, if carefully inserted, incomparably superior to adhesive gold as generally used. The weak points of amalgam are, that until my tests were published no practical method of value testing was known, that they are generally inserted with the greatest carelessness, and that they are frequently mixed and used in such a manner as to make them worthless. A good amalgam, carefully and properly used, stands on a perfect equality for permanence with a wedged plug of soft gold foil; an adhesive gold plug does not, judging from average practical results. My argument is that a moisture-tight plug is safe for ever, that moisture-tight plugs are not inserted as a rule, and that this property of a filling material has never had the prominence to which it is fairly entitled.

Since the above was written I have received sufficient proofs *pro* and *con.* to settle the question fairly. Many skilled operators have taken the matter up, and I have received from English and American operators about thirty-six plugs to test. Of these, which were made with welded gold, no less than five were moisture-tight, one only being in a really difficult cavity (a shallow approximal upper lateral, from Mr. Matthew, of Edinburgh). All the others were very small and simple cavities, the plugs averaging from 1½ to 3½ grains, and many were, I believe, made by operators who are well known, and with a first-rate reputation. These five plugs, which were sound, prove clearly that good work is possible with unlimited time and skill; the thirty-one, some of which were extremely imperfect, although well finished, prove that success is not the rule even in the smallest and most simple cavities.

One operator, who sent five plugs, two of which were sound, said in his letter: "The enclosed will prove that sound plugs can be made with adhesive gold, and therefore your total condemnation of the material was a mistake; at the same time it is very evident that if adhesive gold is to be used at all it must be with excessive care, even in the hands of those most experienced in its use."

Of all the plugs sent, those of Mr. Matthew, I think, will bear the most critical examination; the lateral plug, which I should judge would weigh from three to four grains, took two hours to pack and finish, and from the result I should say he had been well employed the whole time. There is little doubt that the plugs were sent only by those who were confident in their own skill, and when only fifteen per cent. were equal to an average soft foil or tin plug, the thorough ventilation of the question raised will prove of great and permanent value. There is one good point in the fact that every operator can now test beyond the possibility of doubt his own skill and the permanent value of his work. In the face of the proofs and tests given, further correspondence on the subject is a waste of time.

THE SURGERY OF THE MOUTH.

BY FRANCIS MASON, F.R.C.S.,
SENIOR ASSISTANT-SURGEON AND LECTURER ON ANATOMY AT ST. THOMAS'S HOSPITAL.

(*Continued from page* 357.)

IV. DISEASES OF THE ANTRUM.

THE antrum of Highmore, or the maxillary sinus, is the seat of several diseases, and inasmuch as its walls are very thin, a collection of fluid, or the increase of a tumour within its cavity, would necessarily distend it in one or more directions. Thus, as its roof is formed by the orbital plate of the superior maxilla, a growing tumour might press injuriously on the eyeball, and its floor being formed by the alveolar process of the same bone, any irritation from decayed teeth might set up inflammatory action in the cavity, possibly resulting in suppuration or other mischief. According to Mr. Salter, the tooth whose fangs are usually most intimately associated with the antrum is the first permanent molar. The fangs of this or of the adjacent teeth often project completely into the cavity, and are covered merely by the lining membrane. Inasmuch as tumours have been found attached especially to the lower and front wall of the antrum, it has therefore been assumed that their origin is to be traced to the close connection that exists between that cavity and the teeth. But this assumption has scarcely been completely verified, for from Mr. O'Shaughnessy's observations, it would seem that the natives of India, whose teeth are proverbially healthy, have no greater immunity than other people from the various diseases met with in this region. (*a*) Distension of the anterior wall causes more or less noticeable disfigurement of the face, while the projection of the growth backwards is attended in some patients with threatened suffocation. Pressure inwards, again, will in some instances obliterate the nasal cavity. In all extreme cases the finger should invariably be passed behind the fauces, to ascertain if there be any extension of the disease in this direction. If such swelling be detected, and there be also a well-defined protrusion of the hard palate—a marked convexity instead of the normal concavity in this region—the diagnosis of the surgeon will be materially assisted.

The interior of the antrum is lined by a membrane which

(*a*) "On Diseases of the Jaws." By Richard O'Shaughnessy.

is usually continuous by a small aperture in the upper part of its inner wall with that lining the nasal cavity. This aperture establishes a communication between the antrum and the middle meatus of the nose. In the disarticulated skull it is irregular, and of sufficient size to admit the point of the little finger, but in the recent state it is so small as only to allow the passage of a crowquill, being contracted by its articulation with the ethmoid above, the inferior turbinated below, the palate bone behind, and occasionally the lachrymal bone in front. Provided this opening be pervious, fluid accumulating in the antrum might pass from one cavity into the other. This fact is, however, open to question, for in a discussion on a paper brought before the Clinical Society by Mr. Moore, on "Expansion of the Antrum of Highmore," Dr. Humphrey, of Cambridge, stated that, "According to his own experience the fluid secreted and collected in the antrum does *not* escape through the aperture in the nostril."—(*Lancet*, March 26, 1870.) And further, Mr. Tomes (*a*) quotes Otto Weber, who believes that the existence of mucus in the antrum is purely hypothetical, none having been seen in the dead body on opening that cavity. However, during the last two years, the author has seen at St. Thomas's Hospital three cases in which the communication was well marked, and in one of which the patient was compelled when in bed to lie on one side only, owing to the profuse watery discharge which came from the nostril.

"The lining membrane of the antrum," says Mr. Stanley, (*b*) "is thin, loosely adherent to the bone, but little vascular, and smooth on its free surface; its characters more resemble those of serous than those of mucous membrane." As we shall use specific terms, it is important that the reader should bear in mind that in describing the cavity of the antrum, that cavity must be understood to be *within* the lining membrane. The loose connection of this membrane assists in explaining how it is that a cyst connected with the fang of a tooth might in its growth so invade the antrum as to strip the lining membrane from the bony wall, and thus, as in Mr. Moore's case already referred to, obliterate the antrum as a mucous cavity. We shall have occasion to refer to this interesting paper in subsequent pages.

Mr. Heath alludes to a case of his own, in which he believed a tumour in the maxillary sinus originated in a cyst in connection with the incisor teeth, but in which the antrum had been subsequently involved; and further, he

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(*a*) "Dental Surgery," 2nd ed., *loc. cit.*
(*b*) *Loc. cit.*

mentions that Fischer, of Ulm, examined a case *post mortem*, and found, after removing the front of the antrum, a cyst connected with the apex of a molar tooth which filled the whole antrum, without, however, adhering to the lining membrane.

We shall now consider the different varieties of diseases of the antrum, and as an appropriate sequel to the previous chapter the subject that first claims attention is—

A.—CYSTIC DISEASE.

A distinction should be drawn between cystic disease of the antrum and the cysts that are in some way connected with the teeth, and which by their growth invade the cavity, instead of having their origin in it. (*a*)

The disease under notice originates either as a cystic degeneration of the lining membrane, or of some dilatation of its follicles. There may be one cyst of some size partially occupying the cavity, or there may be a number of minute vesicular growths completely filling up the antrum. The contents of such cysts vary. They may be clear as water, perhaps blood-stained, or opaque as milk. They may be flaky or viscid, resembling the fluid found in the so-called ranula. In some cases cholesterine (*b*) may be present, and in other instances there may be pus.

Unless the cyst attains a large size it gives rise to no special symptoms during life; indeed, the disease would appear to have more a pathological than a clinical or surgical interest.

It is extremely difficult to form an accurate diagnosis in such cases, and moreover there seem to be but few examples recorded of true cystic disease of the antrum. (*c*) The following is an instance of a simple cyst connected with that cavity, and which is reported in the *Lancet* of August 6, 1864: The patient was a woman under Mr. Bryant's care, at Guy's Hospital. She had a cyst causing partial occlusion of the right nostril and a projection beneath the ala of the size of a walnut. The tumour had been growing for fourteen years, and was quite painless; in fact, she sought advice for the disfigurement only. The cyst was tapped, and about two

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(*a*) The Museum of St. Thomas's Hospital contains excellent specimens of cyst connected with the antrum.

(*b*) See *Lancet*, June 29, 1850. Case under the care of Sir William Fergusson.

(*c*) The most complete account is that by Mr. Cattlin, in the "Transactions of the Odontological Society," vol. ii.

ounces of blood-stained limpid fluid drawn off, the features recovering their true shape. In a few weeks the fluid re-accumulated, and the tumour was as large as ever. It was again tapped in the mouth, and a strip of lint introduced in order to excite suppuration. The case subsequently did well.

The *treatment* of cystic disease of the antrum will be considered in the following pages.

REMARKS ON THE PRODUCTION OF SLEEP DURING SURGICAL OPERATIONS.

BY JOSEPH T. CLOVER, F.R.C.S.

[BRITISH MEDICAL JOURNAL.]

SINCE the introduction of anæsthetics, there has never been a period when the opinion of surgeons as to the best way of saving pain was more unsettled than it is at present; yet it is a matter in which every practitioner in the country has had some share of experience, and questions as to the relative safety of various anæsthetics are often put by patients with the greatest anxiety. Our time will not be misspent, if we can make a decided step towards the settlement of these questions.

It may be truly said, that there is danger in every kind of inhalation, if in time, or quantity, or some other circumstance, it has been administered in excess. And there are *conditions of safety,* if we only knew them, that would make all the anæsthetics perfectly free from danger. No one, who has had much experience with anæsthetics can look back without remembering some case in which threatening symptoms have occurred. Of these symptoms some have been found to be of slight importance, although very alarming to an uninformed bystander; and some, on the contrary, where, although the lookers-on can see nothing amiss, the administrator knows that the patient is in imminent danger if the anæsthetic be not removed. I shall endeavour to illustrate my meaning further on.

I have been unable to account for the strong opinions to be found in the correspondence of the weekly medical journals, in any other way than by supposing that the results of small doses or brief inhalations of *one* agent have been compared with the larger doses or more prolonged inhalation of another. When we consider that with every known anæsthetic it is an easy matter to destroy the life of animals by concentrating or prolonging the dose, it will appear that it must be a matter of some importance, for the purpose of forming a judgment upon the merits of them, to settle some plan of giving the agents by which the *degree of concentration* as well as the *time* of inhaling is known.

Before speaking of special anæsthetics, I may bring forward some physiological considerations which apply to them generally.

I suppose it will not be disputed that, in administering chloroform, for example, the effect we want to produce is the entrance of a certain quantity into the blood. We know that, in experimenting upon animals, we cannot produce such quietude as is needful for operations without putting a certain proportion of chloroform into the air they breathe; and further, that if the proportion be increased beyond five per cent., the animals will die in a few minutes. The mode of dying varies. If chloroform enter the blood slowly, the heart will go on beating after the breathing has ceased. On the contrary, if the blood be quickly and strongly charged with it, then the heart stops suddenly, and the breathing continues for a considerable period afterwards.

Some animals are less liable to cardiac syncope than others. In dogs, for example, unless some pains be taken to give a very strong dose, the respiration stops first. The same results happen to man; but many circumstances tend to obscure the facts. Thus, although we can limit the maximun proportion of chloroform which can possibly enter the blood, by limiting the proportion of vapour in the air inhaled, we cannot so accurately determine the *minimum* amount which will actually be taken up out of the same atmosphere. *The blood never takes up the maximum amount of chloroform from a given atmosphere, except when the most effective respiration and the slowest circulation of blood concur with muscular exertion and closed glottis.* In very tranquil breathing the fresh air may go no further into the lungs than the primary bronchi; and then the oxygen enters, and the carbonic acid escapes imperfectly by diffusion. During such breathing, the chloroform enters slowly by diffusion into the nearest pulmonary cells, whilst the more distant scarcely receive any of the vapour. The blood circulating through these distant cells is unaffected by the chloroform, and dilutes the blood, which has absorbed chloroform from the nearer cells. Contrast with this what happens in forced breathing. The contents of the lungs (except a small amount of residual air) are expelled, and fresh air containing chloroform is brought by each inspiration into the pulmonary cells. Under the excitement of delirium, in the early stage of narcotism, patients often breathe deeply and rapidly, and the stertor that follows is unusually pronounced; and it is in such cases that cardiac syncope may come on, even although the percentage of chloroform is not in excess of what is usually required. The syncope is the result of the large proportion of chloroform entering the blood and acting upon the ganglia of the heart.

If now, whilst there is this rapid supply of fresh chloroformed air, the circulation through the lung be retarded, and especially if, by the shock of an operation, the heart intermit and the blood for a second or two remain stagnant in the capillaries of the air-cells whilst muscular efforts are made, the absorption of chloroform is carried to the highest point; and, when the failing heart revives, the first blood it sends into its own substance will be stronger of chloroform than any it had yet received, and life will be in the greatest peril.

The effect of great muscular exertion in causing temporary faintness, when no anæsthetic has been breathed, is familiar to all of us. The heart, like all other muscles, loses some of its irritability from severe exercise. These considerations have induced me to take off the chloroform for at least one inspiration, whenever a patient has made a violent effort with closed glottis.

When ether or chloroform is inhaled, the throat is stimulated; coughing and movements of deglutition commonly occur; vomiting even is sometimes directly excited, if the vapour be very strong. The act of swallowing is usually performed well enough; but, if the anæsthetic have produced sufficient effect upon the patient to interfere with reflex movements, then the deglutition may be delayed at the moment when the epiglottis covers the larynx. Raising the chin, and pulling it as far as possible away from the sternum, is usually sufficient to obviate this source of obstruction. If any one will try the experiment of attempting to swallow with his chin considerably elevated, he will find that he cannot do so without lowering it. When chloroform or ether vapour of greater pungency is given, there may be a direct spasm of the glottis produced. A similar spasmodic closure often occurs when nerves are pinched or divided in the course of an operation. It commonly occurs when a ligature is applied to a hæmorrhoid.

I have never found it necessary to take hold of the tongue with forceps; but I advise that they should be kept ready, for it may be that the greater pungency of the vapour, when applied freely, causes an obstruction which raising the chin will not remove; and in such a case we must not be afraid of hurting the tongue.

Ether.—I was a junior student at University College, and saw Liston perform the first capital operation under ether that was done in this country. Although it continued to be used in certain cases in the operating theatre, there were objections to it which even now are but partially removed. The struggling against it, and the strange things patients said and did under its influence and whilst recovering, made us receive chloroform gladly, as a more convenient and less disagreeable agent. It was given with much freedom, until a death occurred at Newcastle, in the practice of Sir John Fife. Of late, chloroform accidents appear to have increased, and thus medical men have very properly been stimulated to seek for a safer anæsthetic. Ether is undoubtedly safer; that is to say, life is not so quickly destroyed by it. But, nevertheless, I have seen a strong dog killed in sixteen seconds by being made to breathe pure ether through a tracheal opening. In the case of death at the West London Hospital, after inhaling first chloroform and then ether, the patient had recovered from the chloroform so far as to have a fair pulse; but it ceased to beat very soon after the application of ether by means of a sponge made warm with water. The chloroform had, I suppose, sufficiently narcotised the patient to prevent the usual obstruction to strong vapours by closure of the glottis. If we are prepared to resist the remonstrances and struggling of the patient, ether may be poured upon a hollow sponge or towel folded into a cone, or upon a cone of felt covered with oiled silk, and held over his face. The patient will resist breathing, at first voluntarily, and afterwards more or less spasm of the glottis will be produced. The blood will be imperfectly oxygenated; and insensibility will be produced in a short time, partly from deprivation of oxygen, and partly from the action of ether. Less ether enters the tissues of the body in this way of giving it; and, if the operation last only two or three minutes, the recovery of consciousness will be speedy. Headache is not rarely complained of. Sickness is about as frequent as after a moderate use of chloroform. The patient sometimes remembers the choking sensation, and will not inhale it again if required. The flow of saliva is considerable; and the larger air-tubes are often obstructed by fluid, which makes a loud moist rhonchus; but it does not appear to be of much consequence, as it goes off afterwards.

I think most English surgeons are in favour of giving the ether slowly for about a minute or so at first; and then, when some degree of anæsthesia has come on, to give the vapour strongly. I am decidedly in favour of this plan, and have sometimes succeeded in getting a patient to sleep without any struggling. The most pleasant way is to give nitrous oxide till consciousness is lost, and then administer the ether of moderate strength. I should be afraid of giving *pure* ether by means of a large warmed sponge to a patient already well narcotised, for reasons already mentioned.

I have given ether a good many times by means of a bag, smaller than the one in my chloroform apparatus. The bag was regularly supplied with air, which passed over a large surface of ether, kept at the temperature of about 68 degrees, at the rate of about five hundred inches per minute. I have for the present put this aside, and make use of what I term a double-current inhaler for ether. The object of this instrument is to effect a mixture of ether and air of the strength required. The internal arrangement is on the plan of an ordinary still, supposing the worm to be covered with calico for holding the ether. The ether is kept at a comparatively uniform temperature, the coldness produced by the evaporation of the ether during inspiration being balanced by the condensation of ether and watery vapour during expiration. The valves are so placed that the inspired air passes over the ether, and the expired air passes through the condenser. The ether in the upper part of the vessel being kept several degrees lower than the patient's breath, it is impossible for the proportion of ether-vapour to exceed a certain point. This proportion is more pungent than is usually required, and is diluted at pleasure by a sliding valve which admits air without passing over the ether. The advantages obtained are—1. The power of graduating the dose so as to avoid very much of the unpleasant pungency of ether as commonly administered; 2. Diminution of the smell of ether in the room; 3. It may be used in hot or cold weather without any water-bath, and the use of glass is avoided; 4. Economy of ether; 5. Saving of time. It can be kept ready for use, and will serve for four or five cases without adding more ether.

Directions for Use.—1. Put ether into the apparatus, after removing the inspiring valve, until the vessel is filled to the level of the bottom of the tube. About ten ounces will be required. 2. Refix valve and cap, and rotate the box slowly on its long axis, to distribute the ether over the calico on the outside of the condenser. 3. Open the regulator, remove the three caps, and apply the tube with face-piece. 4. After using, pour out condensed vapour. It will generally be found convenient to suspend the inhaler by means of the strap passed round the neck; but as soon as the patient is asleep, if not before, it can be placed upon the couch. The condensed ether-vapour might be saved and redistilled, if the apparatus were extensively used in hospital practice. In order to prevent the escape of ether-vapour from the apparatus when not in use, I keep it in a tin box, the front and sides of which are double, so as to form a trough for water, into which the lid of the box is immersed. Of course, if the box be heated, the air inside may expand and escape in bubbles; but very little vapour is lost in this way.

Morgan's inhaler consists of a metallic vessel with a diaphragm of india-rubber membrane, which rises and falls with the breathing. This arrangement effects the same result with ether which I produce by the supplemental bag of my nitrous oxide apparatus. The patient inhales almost the same atmosphere over and over again, the ether and carbonic acid increasing, and the oxygen diminishing. I have used it, and found it both effective and economical. It also wastes very little ether about the room. I think more headache was complained of, and that there was rather more sickness, than when I have used my own apparatus, which allows the escape of most of the expired air without being breathed twice.

In Norton's inhaler, the ether is kept at the required temperature by a water-bath. The air passes over it during inspiration; but the expired air is carried off by a tube to the floor, to diminish the smell of ether in the room—an effective arrangement, but scarcely equal to Morgan's in this respect.

For operations about the mouth, which prevent the use of the ordinary face-piece, a small nose-cap connected with the inhaler will sustain the anæsthesia, especially when the patient has been kept fully five minutes under the influence of ether after insensibility of the skin has been induced. In such cases, it is well to be provided with a tin tube an inch in diameter and a foot long, lined with blotting-paper; and, if required, to pour ether into it, and hold it near the mouth, so that the weight of the vapour will cause it to flow into the mouth during inspiration. Ether is well suited for these operations, because, if the administration have been continued long enough to get the tissues well soaked with ether, the anæsthesia is kept up longer than is usual after the withdrawal of other anæsthetics. Ether is also well suited for short operations for which nitrous oxide is inapplicable. Th complete muscular relaxation produced by ether renders it by far the best thing to use in reducing old dislocations. It is called for in cases where the system has been injured by intemperance with alcohol, or when there is reason from any cause to believe the heart exceptionally weak. In cases of phthisis or emphysema, I should prefer to give chloroform.

(*To be continued.*)

RECENT PAPERS ON DENTITION.

PATHOLOGICAL DENTITION.

BY JAMES W. WHITE, M.D.

[PHILADELPHIA MEDICAL TIMES.]

DENTITION, though a physiological process, is nevertheless recognised as a frequent cause of constitutional disturbance. Doubtless there are extremists who over-estimate the average influence of this process as a disturbing element, as there are those who underrate the difficulties which may attend it. Pathological dentition is by many considered a secondary affection—a single link in a chain of deranged actions—and even when a little patient indicates unmistakably the local irritation, relief is sought by general medication—relaxants, derivatives, calmatives, febrifuges, &c.; then by local emollients, fomentations and anodynes; and lastly, if at all, by lancing the gums, when redness, tumefaction, induration, or the whiteness of the coming tooth seems to demand it. These signs are indeed assumed to be the only possible justification of the operation. If the gums are tumid, tense, and shining, swollen up into a kind of little tumour over a particular tooth; if an unhealthy ulceration with a sloughy appearance form upon the summit of the gum; then, say our text-books and writers upon the diseases of infancy—*then* we may sometimes resort to incision of the gum.

"In forming a diagnosis," says one of the highest authorities, "whether a disease present during the time of teething is consequent upon some derangement of this process, or upon an abnormal condition of some other organ or organs of which the dental difficulty is but itself a symptom, the state of the jaws must be the principal guide. If in the presence of symptoms which might arise from teething, we find that the teeth are not pressing forward to the surface of the gums, and that the latter maintain their normal appearance, it will be useless to have recourse to the gum lancet." Young practitioners are cautioned by a recent writer not to display their ignorance by the use of the lancet, except the *local* indications imperatively demand it. The local signs, it is to be inferred, are tumefaction, redness, induration, ulceration, and the whiteness of the presenting tooth. The direct pressure upon the fibrous tissue is thus assumed to be the cause of the various and serious complications which are too frequently associated with the period of the primary dentition. It is doubtless true, that a hyperæmic condition of the gums may be caused by the growth or eruption of the teeth proceeding more rapidly than does the absorption of their integumental covering, and that the undue pressure thus caused may occasion trouble by the irritation of the nerves of the gum-tissues—manifested locally by tumefaction, soreness, redness, or ulceration; systematically, by fever, irritability, sleeplessness, &c. It is also admitted that judicious treatment of pathological dentition should in all cases include hygienic care, and that constitutional, medical, as well as local surgical interference is generally demanded. Nor is it claimed that in the perversion of this physiological process is to be found an explanation of all the ills to which human infancy is heir; but we assume that pain so intense and unremitting as to destroy the appetite for food, to cause wakefulness, irritability, thirst, fever, diarrhœa or constipation, congestion. convulsions, and death may be due to the irritation of dentition *without the existence of a single local indication.* In other words, that the most serious complications of dentition are not caused by the pressure of the advancing tooth upon the gums, but by the backward pressure of the resisting gums upon the developing and sensitive *pulp,* giving rise to a true toothache, comparable only to that exquisite torture which is experienced in after-life from an exposed and irritated pulp.

If such a condition of things is possible, it will readily be seen that there can be no question as to the extent of the mischief which may result. The association of the fifth pair of nerves, which supplies the dental filaments, with the great sympathetic so connects the teeth with the entire economy that the pathological bearings of such deranged action may not be limited. That such a condition may exist will be readily understood, if it is remembered that at the period of eruption the roots of the teeth are as yet incomplete; that instead of the conical termination and minute foramen which characterise perfected teeth, the aperture is quite large, and its edges thin and sharp. In estimating, therefore, the amount of constitutional disturbance which may result because of a want of accordance between the eruption of a tooth and the absorption of the superimposed tissues which impede it, we may imagine the sensitive pulp, made up of arteries, veins, and nerves, in a condition of irritation from augmented vascular and nervous action—a morbid activity of the process of dentition—followed by determination, stasis, and congestion, producing a hyperæmia sufficient to cause the protrusion of the mass from the incomplete aperture of the root; which, being pressed upon by its thin, sharp edges, is sufficient cause for any amount of constitutional disturbance of which it is possible to conceive.

Under such circumstances it is not difficult to comprehend the inefficacy of any or all hygienic measures; of relaxants and febrifuges; of local emollients and anodynes. It is also easy to understand how the thorough lancing of the gums, over the tooth or teeth thus situated, may, by removal of the pressure, give a relief so immediate and complete that there shall be no room for doubt as to the correctness of the diagnosis.

The *general* indications of what may not inaptly be termed infantile odontolgia are precisely what might *à priori* be expected. The child, at first simply uneasy, becomes by rapid stages fretful, troublesome, peevish, cross, vindictive; cries persistently, or stops crying only to scream; or, if quiet for an instant, will be found to have its thumb or fingers thrust between the jaws, the chewing upon which seems to afford a momentary cessation of anguish, but only momentary. It refuses food, throws down its toys if handed to it, as though in a passion, and is outraged by any attempt to amuse it. To these persistent unmistakable evidences of irritation are added a flushed face, corrugated brow, compressed lip, intolerance of light, and disturbed, broken sleep, the desire and effort to sleep seeming to be thwarted by fresh accessions of pain, until the little one sinks exhausted into a troubled slumber, but of short duration. Concomitant with these manifestations, or quickly succeeding them, will be some of the various systemic complications, too frequently with fatal ending, and still *no local indication* of the trouble which is consuming the young life.

A case recently under the care of the writer afforded a marked confirmation of these views. A child one year of age, with the four superior and two inferior incisors in position, after three weeks of restlessness, wakefulness, loss of appetite, fever, paroxysms of pain, and rapid emaciation—all without obvious cause, certainly without the slightest local indication of trouble in the mouth—was *cured* by free crucial incisions over the molar teeth, the improvement being so evidently the result of the operation that the relation of cause and effect was plainly recognised by every member of the family.

Such cases are not exceptional, and suggest a more careful investigation of the developmental processes of dentition in otherwise unexplainable diseases of infancy.

CONSTITUTIONAL RELATIONS OF SECOND DENTITION.

[THE LONDON MEDICAL RECORD.]

DR. JOSEPH MULREANY records a number of cases occurring in his practice, and illustrating some practical points connected with the protrusion or cutting of the permanent teeth, especially the first four molars and the four wisdom or third molars. He believes that the physiological irritation of a new tooth cutting through the gum is the direct, though frequently unsuspected, cause of many diseases, both of childhood and maturity, and that the results of treatment demonstrate conclusively that such is the case. He says that every case of true hip-joint disease he has met with began between the fifth and seventh years, or it might be a few months earlier; and also that whatever mischief occurred to the joints took place during the cutting of the first four permanent molars, and that, after they had come fairly through, the process of reparation fairly commenced. His illustrations are numerous, the more important ones being as follows:—

CASE I.—Miss W., when a child of between five and six years, suffered from morbus coxarius. The first indications of the joint-disease were lameness and pain when the head of the femur was strongly pressed against the acetabulum. In process of time the usual symptoms of pain in the knee, flattening of the hip, and shortening of the limb took place, but all in a mild form, and all subsided at the end of her sixth year, coincidently with the complete protrusion of her first four molar teeth, leaving her slightly lame for life. She was a member of a family of a highly scrofulous diathesis.

CASE II.—Margaret McC., aged six and a half years, had had pain in the left hip-joint and knee for over a year, and was slightly lame; the hip was flattened; the right upper molar was not yet protruded. The gum was well scarified, and she was ordered iodide of iron, with senna as an aperient—

the gum to be scarified once a week until the tooth came fairly through. In a month she was greatly improved.

Case III.—C. D., aged twenty months, had enlarged and suppurating cervical glands, but was in good condition. About the twenty-fourth month he had cut all his deciduous teeth, and every bad symptom disappeared. In his fifth year, he was suddenly seized with pains in his left hip. He was ordered an effervescing mixture containing iron and iodide of potassium, and a small blister was applied from time to time over the hip-joint. The gums were not scarified, owing to the violence of the patient. This condition continued for a year and a half; sometimes he could walk without the aid of a crutch, but invariably, when he had a teething spell, he was forced to crawl about on all-fours. At this time a surgeon, who was called in consultation, diagnosed such an amount of disease as to warrant immediate resection of the hip-joint, though Dr. Mulreany was convinced that it was a case of morbus coxarius brought into action by dental irritation. Amputation of the head of the femur was attempted, but a deep and ample incision down to the capsular ligament assured the operator that the joint was too sound to justify him in cutting into it, so the operation was abandoned; but the final issue of the case is not stated.

Case IV.—A boy, aged six years, was seen in consultation. His physician stated that for six weeks the boy had had a kind of remittent fever, worse at night, with obstinate constipation. On examination, it was found that the first four molars were pressing against the gums, causing much tension, and that there had been epistaxis. A few days later, the child growing worse the gums were scarified, a laxative mixture was given, and in two days the attack was concluded. An important medico-legal point sometimes arises between the eighth and fifteenth year, the inflamed condition of the gums over the bicuspids often giving rise to a purulent discharge from the vagina. Too often such discharges have been received as testimony of rape.

Of the phenomena associated with dentition between the seventh and fifteenth year, scrofula of the bones, nocturnal incontinence of urine, chorea, and heart-affections are the most common.

The following cases have a bearing on the cutting of wisdom-teeth:—

Case VII.—Mr. V., aged twenty-three, was subject to violent bilious attacks, low-spirited, sleepless, constipated ; he had frequent epistaxis and pain in the articulations of the lower jaw. None of the wisdom-teeth were through. His gums were scarified, and he was ordered to do the same frequently, and to take a little tincture of iron, and an infusion of senna. He was cured.

Case VIII.—Miss A. D., aged eighteen, tall fair, anæmic had a cardiac bruit, violent headaches, profuse epistaxis, and irregular menstruation ; the wisdom-teeth were not quite through. Her gums were thoroughly scarified frequently, and quinia and tincture of iron, with senna as an aperient, were given. She recovered.

Case IX.—Miss B., aged twenty, had profuse epistaxis, preceded by jaw-ache, approaching phthisis of the right lung, quick pulse, loud anæmic cardiac bruit, amenorrhœa, frequent micturition, and constipation. The wisdom-teeth had not shown themselves. Her gums were scarified, and she was ordered quinia, iodide of iron, and tincture of digitalis.

Case X.—Miss S., aged seventeen, was pale and exsanguine, and had palpitations of the heart, headaches, constipated bowels, menorrhagia, coated tongue, and a chlorotic bruit. She had lost great quantities of blood, owing to nervous obstruction at the centre of the circulation, caused by dental irritation from the wisdom-teeth acting directly on the heart. Scarifications, iron, and digitalis effected a speedy and perfect cure.

Case XI.—Mrs J. M. S., aged nineteen, had been married six months, during which time she had had a coloured discharge from the vagina. None of the wisdom-teeth were present. Scarifications and tincture of iron gave the happiest results.

Dr. Mulreany proceeds to state that dental irritation may be the cause of dropsical effusions, both in the chest and in the abdomen, of heart-affections, of hysterical troubles of the joints, of masturbation, and of sterility and miscarriage, and gives cases in support of his views ; but he asks that the physiological irritation of which he speaks shall not be confounded with the pathological irritation of an old, decayed and carious tooth producing periostitis and gum-boil.

ON THE DANGERS OF DENTITION.

By JAMES FINLAYSON, M.D.,

Fellow of the Faculty of Physicians and Surgeons, Glasgow; Assistant to Prof. Gairdner's Medical Clinique; and formerly House-Surgeon to the Manchester Clinical Hospital and Dispensary for Children.

[THE OBSTETRICAL JOURNAL.]

II. AMOUNT OF MORTALITY DUE TO TEETHING ACCORDING TO THE RETURNS OF THE REGISTRAR-GENERAL.

It might be supposed that the somewhat vague estimates of the mortality from dentition quoted in the last section, could now be replaced by the actual figures from our bills of mortality. But before beginning the discussion of these returns it is well to call to mind all the uncertainties underlying them:—(1.) Made up from the statements and certificates of a large number of separate individuals of different ages, with different degrees of medical knowledge, and with very different views of the nature and causes of disease, it must be remembered that the returns are the average expression of a very heterogeneous mass of opinion. (2.) The average thus represented is tinged no doubt to a large but variable extent with non-medical opinion. (3.) Even when an illness has been regarded as due to dentition, the death may have been returned under the particular form which the illness assumed, so that of two fatal illnesses regarded by two practitioners as due to dentition, one may have been returned under the name of teething, and the other under the name of diarrhœa or convulsions.

Diversities, however, such as the one last named, tend in large numbers to balance themselves so as to make the series of figures fairly comparable from year to year. The notions of disease existing among the vulgar follow to some extent current medical opinion. Perhaps, therefore, the whole series of figures may serve to show in a rough way certain changes and peculiarities in the history of the medical doctrine with which we are concerned.

Registrar-General's Returns for England.

The most striking fact presented by the returns for England is the great and steady diminution in the mortality ascribed to teething. In the first five years, from 1838 to 1842, the mean annual mortality ascribed to this cause was 5,130; in the last period of five years, from 1865 to 1869, this mean annual mortality amounts only to 4,218.

When we remember the great increase in population which had occurred in this interval of a quarter of a century, the diminution in the actual numbers is very striking. This is well brought out when the number of deaths from this cause is calculated in proportion to one million persons living at a given time. Such a calculation gives for the periods named a reduction from 333 to 198. (See Table I.)

TABLE I.—ENGLAND.

—	Births.	Total Deaths.	Deaths under Two years.	Deaths from Teething.	Proportion of Deaths from Teething to One Million Persons living.
Mean of 1838—42	497,712	346,959	103,904*	5,130	333·8
Mean of 1865—69	766,105	487,624	160,337	4,218	198·8

The number of deaths from teething presents from year to year what may be called on the whole, a pretty steady decrease, and this decrease is even more pronounced when the proportions are calculated according to the population living. (See Table II.)

TABLE II.

Year.	Deaths from Teething.	Proportion to 1 Million Living.		Year.	Deaths from Teething.	Proportion to 1 Million Living.	
1838	4404	298	333·8	1855	4057	219	204·4
1839	5016	332		1856	3660	194	
1840	5219	339		1857	3992	209	
1841	5324	341		1858	4021	209	
1842	5689	359		1859	3730	191	
1843—46 not abstracted.				1860	3896	198	202·4
1847	4538			1861	4251	214	
1848	4120			1862	3812	190	
1849	4627			1863	4116	202	
1850	4086	230	244·2	1864	4285	208	
1851	4410	249		1865	4271	206	198·8
1852	4413	246		1866	4293	204	
1853	4676	258		1867	4300	203	
1854	4369	238		1868	4145	193	
				1869	4083	188	
				1870	4183	188	

These numbers, however, also present certain fluctua- which may afford some light. Such a fluctuation occurred in 1849, when the mortality rose from 4,120 to 4,627. This was the year of a cholera epidemic. After this temporary elevation the mortality from teething continued to fall, but in the years 1853 and 1854 it rose to 4,676 and 4,369 respectively, cholera being again epidemic in these years. The next epidemic of cholera in 1865-66 is not marked by any rise in the reported mortality from teething.

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* Mean calculated without 1840, which could not be found.

When we remember that *cholera infantum* is very often ascribed to dentition, it is difficult to resist the opinion that the increase thus pointed out was due to some cases of the prevailing epidemic being ascribed to the process of teething. This view is somewhat strengthened by the distinct diminution in 1854 as compared with 1853; the public and professional mind in the second and more severe year of the epidemic was no doubt more fully alive to the existence of cholera in our midst.

For somewhat similar reasons oscillations in the mortality from teething have been sought for and traced according to the season of the year. The returns for the City of London for 1840 to 1847 are well adapted for this comparison. The third (or autumn) quarter of the year is there shown to have a much heavier mortality from teething than the other quarters, and although the variation is not so striking as that evinced by diarrhœa, it is essentially similar in kind. (See Table III.)

TABLE III.—LONDON.

Mortality from Teething.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter
Mean for 1840 to 1847 ...	192·7 ...	171·3 ...	244·1 ...	177·5

The influence of age is also well worthy of careful attention. Taking the last year (1870) of the English returns, we find that much more than one-half of the deaths from this cause are given as occurring within the first year of life. Out of a total of 4,183 deaths, 2,192 were under one year, and 1,820 were between one and two years. Whence comes this preponderating burden on the first year of life? The visible phenomena of teething seldom begin till the sixth or seventh month, and comparatively few deaths could be plausibly returned from this cause earlier than that age. Yet the process of teething during the remaining months of the first year is more destructive to life than in the twelve months of the second year, during the whole of which time teething is usually going on actively. This is all the more remarkable, seeing that deviations from the natural course of dentition, such as are usually supposed to be perilous, tend as a rule to throw the teething period somewhat later than normal. Is it reasonable, or even in accordance with general opinion, to suppose that the incisors cause so much more danger than the canine or molar teeth, as to account for this difference? Or is it not more probable that in early age the fatal illnesses of infants being more obscure and difficult to classify, tend to be huddled into the convenient category of teething?

The influence of locality on this item of the general mortality is extremely marked. In the method devised for the purpose of showing this in the English returns, populations of nearly equal magnitudes are compared so as to show the influence of town and country residence, Comparing the metropolis and twenty-five other town districts on the one hand, with certain country districts on the other hand, the proportion of deaths from teething to the actual population living was found in the first four years of these returns (1838 to 1841) to be more than five times greater in the former than the latter. (See Table IV.)

TABLE IV.—ENGLAND.—(1838-1841. 5th Report.)

	Population.	Deaths from Teething.	Proportion to 1 Million Living.
District of 25 Towns ...	1,883,693	... 5351	... 616
Metropolis	1,875,493	... 3543	
South Western Division of Counties	1,740,017	... 808	... 120
Essex, Gloucester, &c. ...	1,700,484	... 771	

Without pausing to contemplate the extraordinary difference which the fact of residence is thus supposed to impress on the results of a universal physiological process, we may at least congratulate ourselves that four-fifths of the teething mortality reputed to exist in our towns would thus seem, even according to popular estimate, to be of our own making.

But further, the remaining fifth is arrived at only as a matter of comparison, and it cannot be doubted that even in the healthiest districts multitudes of children are in conditions as prejudicial to health as those which in towns give rise to the enormous mortality ascribed to teething. If, therefore, we desire to estimate from these returns the real influence of dentition, *per se*, as a cause of death, we would require to make another large deduction from the mortality of even the healthiest districts which the registrar could select. It would be rash to put any estimate on the reduction thus demanded.

But in contemplating the mortality from teething as alleged to occur in our large towns, we can realise two distinct elements in its production:—(1) The process of teething itself, to which all infants must submit; and (2) the adverse influences of town life on the constitution, nurture, and health of the children. But the figures in the returns indicate that the second of these two elements is responsible for at least four-fifths (and probably for very much more) of the fatality, seeing that the other element, being universal, exists as much in the country as in the town districts. Bad hygienic conditions being thus found to be comparatively so potent for mischief to children at the teething period, and the mere fact of teething being comparatively trifling as a cause of death, it remains for consideration whether we are justified in attributing to a necessary physiological process such deadly results, or whether all or nearly all the mortality might not more fairly be ascribed to the conditions already noticed, and to others of a similar nature which are confessedly so disastrous to infant life.

The Registrar-General's Return for Scotland.

being for a much shorter period of years, and dealing with much smaller figures, are less valuable for our present purpose, but they are useful by way of comparison. The most striking fact on comparing the statistics of the two countries is the greater importance assigned to teething in the Scotch Reports. It ranks much higher in the list of fatal diseases, and the proportion of deaths from dentition to the number of living is much higher than in the English tables. (See Table V.)

TABLE V.—SCOTLAND.

	Deaths from Teething.	Proportion to 1 Million Living.			
1855	1014	370	386		
1856	1028	360			
1857	1341	470			
1858	1171	410			
1859	996	340		Town Districts	644
1860	1066	360		Mainland—rural	241
1861	1137	380		Insular	94
1862	1106	370			
1863	1132	380			
1864	1124	370			
1865	1047	350			
1866	1038	340			
1867	962	320			
1868	937	300			

In the first ten years of the Scotch Returns (from 1855 to 1864) the mean annual mortality from teething calculated to one million persons living was 386—a proportion never once attained in the English Tables from the year 1838 to 1870; for the period of the same ten years the English mean calculated in the same way is 203·4.

But although the Scotch mortality from teething occupies thus a much higher level, the very same tendency to decrease can be traced throughout the series of years. The maximum mortality ascribed to this cause was reached in 1857, when 1,341 deaths were returned under this head, being in the proportion of 470 per million living. After the remarks already made, it is interesting to find that this year shows an excess of deaths from diarrhœa, greater than any year before or after it in the table. Since that year the rate has fallen with tolerable regularity from 470, as a maximum in 1857, to 300 as a minimum in 1868.

The influence of locality is shown every year by the registrar's division of the whole of Scotland into town, mainland—rural—and insular districts. Taking the mean annual proportion of deaths to one million persons living, teething was found during 1855—1864, to cause 644 deaths in the towns, 242 in the rural—mainland—and 94 in the insular districts. Comparing the best with the worst we find a sixfold difference, a result closely corresponding with the English statistics.

But while the towns, as might be expected, thus predominate so largely in this item of mortality, we find that the diminution from year to year, already noticed, is due to the towns exclusively. The mainland and insular districts have preserved throughout a very uniform rate. In the towns, however, the proportion of deaths from teething has come down pretty steadily from 830 to 460 per million living, or, calculating it differently, from 312 to 161 per 10,000 deaths.

Following the inquiry into the different towns of Scotland, we find a decrease from 50 deaths in the year 1855, to 27 in 1868, in the case of Edinburgh; and a somewhat slighter proportional reduction in the case of Glasgow. In Dundee, on the contrary, at least from 1865, the reported mortality from teething has increased to a startling extent.

SECTION OF THE BUCCAL NERVE BY THE MOUTH.

[LONDON MEDICAL RECORD.]

Dr. J. Panas, Surgeon of the Lariboisière, has communicated to the Academy of Medicine (Dec. 23, 1873) an account of the section of the buccal nerve from the mouth, with operative rules, which, he says, are not given in books of operative surgery.

Only one procedure has been described thus far, and by this the nerve is sought for by dissection from the skin to the deep surface. It may be described as the proceeding of M. Michel, of Strasbourg, who first, in 1856, performed section of the buccal nerve. A description of it is found in the theses of Voisard (Strasbourg, 1864) and in those of Gaux (Strasbourg, 1866), as well as in the work of Letiévant (*Traité des Sections Nerveuses*) 1873). According to M. Panas, Nélaton made the first attempt to divide this nerve from the mouth in 1857, and this procedure was repeated a second time by Nélaton in 1864 (*Bulletin de Thérapeutique*), but of these efforts there remains no trace in rules for the performance of the operation. M. Panas has now drawn up the following description of the operation of intra-buccal section.

First Stage.—The patient being seated facing the light, and having the mouth largely opened and well-lighted by the aid of Luer's gag, applied at the commissure on the side of the operator, the surgeon places the extremity of his left index finger towards the middle of the coronoid border of the jaw. He makes a vertical incision two and a half centimetres long, parallel to his nail, commencing at the middle of the last upper molar, and terminating at the last lower molar. This incision should only divide the mucous membrane.

Second Stage.—The buccinator muscle being thus uncovered, all the fibres seen are divided vertically layer by layer, in such manner as to avoid injuring the buccal nerve, immediately subjacent, and the fatty pad of the cheek.

Third Stage.—The nerve is then looked for. It passes transversely from behind forward, following a line drawn from the coronoid border of the jaw and terminating at the commissure of the mouth. A little blunt hook passed into the middle of the incision, made according to the preceding rules, enables the nerve to be found easily, after which it is divided by a pair of blunt scissors curved on the flat. The only vessels of any importance which are necessarily opened, are, the buccal arteriole and venule, satellites of the buccal nerve. Torsion arrests hæmorrhage. The little jet from this artery, and the sensation from pulling on the nerve, easily convince the operator that he has found the nerve; the loss of sensibility following the section confirms the evidence of the completion of the operation. In order to be sure of dividing all the filaments of the buccal nerve, it is well to incise the buccinator to the whole extent of the wound made in the mucous membrance, and, if necessary, even to penetrate the fatty cushion of the cheek. The advantages of this method are: that it is quick and certain; that it produces no cicatrix, and avoids deformity; that no risk is incurred of wounding the facial artery or Stenon's duct. M. Panas has performed the operation with facility, and with a result successful, for the time at least, on a woman suffering from obstinate neuralgia of twelve years' standing. In all, M. Panas enumerates only seven operations of this sort; two of Michel, one successful; two of Nélaton, one successful; two of Letiévant and Vallette, one successful. The results of the operation, then, are uncertain; but there is encouragement to employ it in desperate cases.

THE LAWS OF TRANSMISSION OF RESEMBLANCE FROM PARENTS TO THEIR CHILDREN.

BY JOHN STOCKTON HOUGH, M.D., OF PHILADELPHIA.

(*Continued from page* 416.)

PART II.

WHY CHILDREN RESEMBLE THEIR MOTHERS MORE THAN THEIR FATHERS.

BUFFON says: "The molecules furnished by the father ought to procure his resemblance, if they are more abundant than those of the mother, and when the father furnishes less it leaves the infant more of the resemblance of the mother, which latter occurs very frequently."

Darwin has progressed but little further, where he suggests that the resemblance of offspring to one parent in one part, and the other in another part, is not difficult to understand on the admission that the gemmules in the fertilised germ are superabundant in number, and that those derived from one parent have some advantage in number, affinity, or vigour over those derived from the other parent." (*a*)

These explanations are scarcely more definite, and little different from the ancient opinions on the same subject, a sample of which we give from Lactantius: (*b*) "Simili-

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(*a*) "Animals and Plants under Domest.," vol. ii., p. 386.

(*b*) "De Opificio Dei," cap. 12. Compare also Lucretius, "De Rerum Natura," b. iv.

tudines autem in corporibus filiorum sic fieri putant. [Varro scilicet et Aristoteles] cum semina inter se, permixta coalescunt, si virile superaverit, patri similem provenire, seu marem seu fœminam. Si muliebre prævaluerit, progeniem, respondere maternam." (*c*)

"Even in hybrid plants, Koelreuter says he has produced or diminished paternal resemblance by increasing the quantity of impregnating dust," while Mr. Knight says: "Except in cases where superfœtation took place, I have invariably found the effect of a very large or a very small quantity of pollen to be invariably the same in its influence on the offspring." (*d*)

It is well enough to observe here that the discrepancy between these observers may very possibly be due to the time or *degree of maturation of the ovules* when the pollen was applied.

It is quite possible that great inequality in the ages of the parents may have some effect in determining the resemblance to either parent, as some authors attribute defects in children to this cause, and Hoffacker and Saddler have shown that the proportion of sexes born to such parents differs very considerably from that among couples of nearly the same ages.

Helvetius, Weikard, and others, thought that the resemblance of children to their parents depended less upon hereditary transmission than upon education, imitation, and other analogous exterior circumstances. Burdach (*e*) very properly remarks that "with the excellent intention of raising a man, which is free to all who desire to make use

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(*c*) Dr. Allen, of Lowell, Massachusetts, very properly calls attention to the great want of rules whereby we may judge of resemblance and constitutional predisposition. He says: "It is true that the general fact of resemblance of children to parents has long been admitted; but then we have no guide or rules whereby every feature and shade of this likeness can be traced out between the offspring and the parent, or dissimilarity accounted for. While in books and journals there are many admissions that there is, and must be, much truth in this law of resemblance, you may search medical and other libraries through and through without finding a single treatise or scarcely an essay that discusses this topic in an intelligible manner. But it is an encouraging fact that the most progressive men in the medical profession, both in Great Britain and in our own country, are waking up to the truth and importance of this subject, especially as it is manifested in the transmission of disease. A careful inquiry into the diseases of a person's parents and ancestors enables one to understand more distinctly what are his predispositions to particular diseases, and what are constitutional and what are not."—Nathan Allen, M.D., LLD., "Hereditary Influence in the Improvement of Stock," &c., 1872, pp. 30, p. 10.

(*d*) Thomas Andrew Knight, "Philos. Trans.," 1809, p. 394, "Influence of Male and Female Parents on their Offspring."

(*e*) "Physiologie," v. ii., p. 248.

of that liberty, it is too far from the truth to hazard that hypothesis; for hereditary qualities have really more control over our constitution and our character than all the influences from without, physical and moral. As the children of a marriage often differ altogether the one from the other in regard to constitution, inclinations, and propensities, although having all been raised under circumstances equally good," &c.

Congenital conditions are not the only ones which are subject to hereditary transmission; the same thing happens equally to those which are accidentally acquired or have been subject to the will. It is not rare to see mastiffs,(*f*) dogs, and cats born with a short tail resembling the acquired malformation in their parents. (*g*)

It seems, therefore, from all the authorities cited, to be pretty generally believed that mothers impress their children of both sexes with their physical and moral peculiarities, their constitutional tendencies and hereditary diseases and defects; in short, a general resemblance more marked than that derived from their fathers; and it is not at all surprising that this should be so, for the child is for a considerable period, amounting to at least two years, under the exclusive control and influence of the mother and her varying physical condition during this time.

In the first place, it may be well to inquire, when and where either parent begins to impress the product with a resemblance to themselves. For convenience we may divide the the time and place of impression into four parts, viz.:—1. Impression on either element before fecundation. 2. Impression from the instant of fecundation until the product leaves the Graafian follicle. 3. During gestation. 4. During lactation. At each one of these periods the ovum or product of conception usually receives impressions, but most in the second, or indeed principally there, as some authors have it, for they say that both resemblance and hereditary disease are communicated during this period. Constitutional diseases and peculiarities are probably communicated during this time, though the period of gestation must be reckoned to have great influence on the tastes, inclinations, and *qualities* of the physical and mental faculties.

It is quite probable that the ova of the female have an initial existence, as primordial cells or germs, at a very early period in the life of the child, and are in some degree

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(*f*) "Der Naturforscher," t. xv., p. 25.
(*g*) Burdach, "Physiol.," v. ii., p. 251.

capable of receiving and retaining impressions which may influence the products derived from them.

On the other hand, the spermotozoa are probably not in a condition (if indeed they have an existence) much before puberty to receive or retain the result of impressions made upon the man. So then, before impregnation, the female element has, in all probability, been subjected to the varying physical conitions of the woman for a much greater length of time than the male element has been to the varying physical states of the man; and the former is, moreover, much more susceptible to such impressions than the letter. Some may think that the ova are not susceptible of being influenced by such methods as I have suggested; to these I can only point to the great difference in appearance, constitution, viability, tastes, and inclinations of children by the same parents, while twins are proverbially alike in some one if not all these particulars.

Dr. Martin Barry, in his observations on the "*direction*" of development as influencing the "*individual* peculiarities of structure," says: "Strictly speaking, therefore, no two individuals of different births can have the same parentage; for though the *individuality* of the parent, or of each parent, does not change, yet as *individuals*, the parents are continually changing.

"The more nearly *contemporaneous* separation of their elements, and the contemporaneous derivation of nourishment from the maternal fluids during fœtal life—but especially the former—are perhaps the causes why twins are sometimes so much alike in individual structure; and *superfœtation* may be, in part at least, the cause why this is not always the case.

"There is, however; another cause why individuals, even of the same birth, should differ—viz, the different periods at which the maternal portion of the germs may have been first secreted in the ovary; for, though continually renewed, they must have in consequence a more or less peculiar state of being." (*h*) This point is well illustrated in the frequency of differences in colour, constitution, &c., in the young of the same birth in multiparous animals.

We conclude, therefore, that there are few, if any, physical, moral, or mental acts of a woman's life that are not without some influence, however inappreciable, on every child which she may subsequently bear. And every *suc-*

(*h*) "On Unity of Structure in the Animal Kingdom," in *Edinb. New Philos Jour.*, 1837, vol. xxii., p. 138.

ceeding child is influenced by the impressions left on the maternal organism by each and every *preceding* child, though they may all have been of the same father, and this influence is increased with the number of fathers. This brings us to the subject of resemblance of a child by a second husband to the first, which is not within the limits of the subject under discussion.

After or at the time of impregnation, the father begins to exert a combined influence with the mother, though this influence is much less considerable than that of the female, for in addition to the influence exerted before impregnation, she has begun a new process, which only ceases at the completion of the term of gestation. During lactation the child is impressed in some degree, however slight, by the varying conditions of the mother. Through this source it may imbibe cachexias, diseases, tastes, and inclinations. Indeed some writers have made this an argument against the use of the milk of the lower animals, lest the child should be brutalised by such food. Tupper (*i*) contends that children are even educated in their mother's milk.

Every child a woman bears inoculates, so to speak, her constitution with some of the peculiarities of the father of the product; and, other things being equal, it is probable that the greater the number of children the greater will be the impression made upon her system by the husband, until she will finally come to resemble (*j*) him in some degree at least. This influence is probably greater in the cases of gestations with daughters than with sons, for three reasons, viz.— 1. The father's influence begins earlier in the case of female conceptions, as the ovum is fecundated at an earlier period of development. 2. Female fœtuses sap the vitality of the mother more than males. 3. Daughters resemble the father more than sons. From these reasons, then, it is only fair to infer that a woman who had borne a certain number of daughters ought to resemble their father more than after bearing the same number of sons. The husband will therefore lose a part of his individuality, or

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(*i*) "Proverbial Philosophy."

(*j*) Yet in the long years liker must they grow;
The man be more of woman, she of man;

. . . .

Till at the last she set herself to man
Like perfect music unto noble words;

. . . .

Distinct in individualities,
But like each other, even as those who love.
Tennyson's Princess.

rather his wife will have acquired a share of it. If this be true, the younger children ought to resemble the father more than the elder; and, if the mother's system can be inoculated with his defects and diseases, even though they be constitutional, as is certainly the case in syphilis, it is only fair to infer that the yonnger children would be more likely to inherit a predisposition to these affections than the elder (*k*), and consequently have relatively a lower viability.

This fact of a woman acquiring a resemblance to her husband might be used as an argument against the propriety of a widow marrying her deceased's husband's brother, though it would not materially affect the propriety of a widower marrying his deceased wife's sister.

It is well known also that women sometimes become masculine, and females of the lower animals take on secondary sexual characters of the male, though the reverse seldom, if ever, happens.

I am told that Mr. Tylor (*l*) has ingeniously explained some apparent anomalies in the prohibition of consanguineous marriages not extending equally to the relatives on both the male and female sides. Though I have not seen this work, I imagine it refers to the matter just mentioned.

Mr. Clark, a breeder of fighting cocks, "found, after repeated trials, that there was a greater reduction of weight in the young from a father paired with his daughter, than from a mother with her son."(*m*) From this it would appear that there is a greater resemblance between the father and daughter than between the mother and son.

Gaertner (*n*) repeatedly found that when a hybrid was used as the father, and either one of the pure parent-species or a third species was used as the mother, the offspring were more variable than when the same hybrid was used as the mother and either pure parent or the same third species as the father.

Sedgwick, after referring to the transmission of hypospadias by females, is of the opinion that " it cannot at present be satisfactorily decided whether such interruptions in the transmission of peculiarities thus necessarily limited to

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(*k*) The relative viability of younger and elder children will be fully discussed in a forthcoming paper on the " Physical Aspects of Primogeniture."

(*l*) " Early History of Man," Lond., 1865, ch. x.

(*m*) Darwin, "Var. Anim. and Plants under Domest.," vol. ii., p. 125.

(*n*) "Bastarderzeugung," S. 452, 507.

the male sex are equally liable to occur in those peculiar to females by transmission through males. It is well known that the power of giving a copious supply of milk may be transmitted by the bull as well as by the cow; but my observations on this subject lead me to infer that, in all cases of interrupted descent in hereditary disease, the transmission by females is more common than by males, and that as regards the class now under consideration, it may be asserted in general terms that whilst there is little difficulty on the part of females to transmit diseases and defects of exclusively male organs, there are very few, or rather scarcely any, corresponding cases in which the reverse occurs." *(o)*

(*To be continued.*)

NEW INVENTIONS.

BRAGG'S CHARCOAL.

We have received specimens from Mr. Bragg, of Wigmore Street, Cavendish Square, of the charcoal biscuits, charcoal lozenges, and finely levigated charcoal, prepared by him.

These preparations of charcoal are very useful in many unhealthy conditions of the stomach, but they are especially useful to dental surgeons in those cases where an accumulation of salivary calculus, with purulent discharge from the margins of the gums produces an exceedingly fœtid breath. These conditions are evidently due partly to local causes and partly to imperfect digestion, and it is here that the vegetable charcoal is peculiarly efficacious. The biscuits taken internally, and some of the powder used with water as a mouth wash and dentrifice will, with the necessary attention to the teeth, produce in a short time a much more healthy condition than can be obtained by simply cleaning the teeth alone. We have used the charcoal powder for the purposes indicated, and can strongly recommend its more extended adoption by the dental profession.

TURPIN'S RUBBERS.

We are glad to be able to report satisfactorily on the dental rubbers made by Turpin, of Paris, after an extended trial of the various kinds put into the market. The pink enamel is one of the best colours that we have seen, though from this fact it is, of course, not so strong as the plain pink; the black

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(*o*) *Op. cit.*, p. 173, July, 1863.

is exceedingly hard and tough, and takes a very good polish. One great merit in the pink rubber is (so far as sufficient time has allowed us to test the point) that it does not become roughened and broken up on the surface after being worn in the mouth for some time. This occurs with some of the pink rubbers, and is a serious defect.

NEW BOX FOR HOLDING POLISHING TAPES.

To the Editor of the MONTHLY REVIEW OF DENTAL SURGERY.

SIR,—I have just received from Messrs. Ash a box for holding polishing tapes. It is cheap and very convenient. It is easily charged and as easily emptied, and by the use of an elastic band each roll of tape is held together till the last bit is used.—Yours, &c., J. S. TURNER.

12 George Street, Hanover Square.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, APRIL 13, 1874.

The President, EDWIN SERCOMBE, Esq., in the Chair.

THE minutes of the previous meeting were read.

Mr. EDWIN SAUNDERS then rose and said :—

Sir,—Before proceeding to the confirmation of these minutes, I wish to say a few words by way of correction and explanation of what I am reported to have said at the last meeting in proposing the thanks of the Society for your interesting address. I feel called upon to do so, because what I stated has been impugned with a vehemence which appears to me to be out of all proportion to the gravity of the occasion. In common with many others who could recall within how short a time our institutions had grown up, I was strongly impressed with the contrast presented by the large gathering of members of the Society, and others, drawn together on that occasion, and the state of isolation which formerly prevailed. My memory easily flew back to the time when the ice of social and professional reserve in which we were all crystallised was at length broken through, and especially I remembered the great friendship which at once sprung up between our first and second Presidents, and how they often regretted the years of friendly intercourse missed for want of earlier acquaintance. And in the excitement of the moment, and disregarding due perspective in grouping the incidents, I am reported to have said that it would now hardly be believed that they were personally unknown to each other till the meeting at which the Society was formed. This is certainly inexact, as meetings, taking the form of dinners, were held at an earlier date, which, though intended to lay the foundation of concerted action for the organisation of our profession, ultimately died out without any solid result. Thus, to be chronologically accurate, it should be stated that in this, as in many similar cases, there was a hiatus between the first efforts and the ultimate realisation of union. Anything like historical accuracy was not in my mind, nor do I think it would have been befitting the occasion; but seeing the two portraits (which, allow me to say were never before seen to so much advantage), I was carried away by the excitement of the moment, and so, having my attention arrested more by the events than the time in which they occurred, was inadvertently betrayed into the inaccuracy, for which I now desire to make reparation.

The minutes were then confirmed.

Mr. SEWILL related a case of severe hæmorrhage occurring five days after the extraction of a tooth from a child aged 14. The bleeding was apparently arterial in character, and was arrested with difficulty by plugging the alveolus. The patient showed symptoms of loss of blood for several days afterwards, and the case was undoubtedly one which might have terminated fatally had not the flow of blood been arrested by art.

Mr. CHARTERS WHITE had had a similar case in an adult, and he controlled the bleeding by styptic colloid—a preparation which he always applied when bleeding continued after the extraction of teeth.

Mr. CHARTERS WHITE presented microscopical preparations of epithelioma of the tongue, and related some cases of that disease. One specimen was from a tongue which had been removed by Mr. Wood, of King's College. It showed the remarkable manner in which cancer obliterates the normal tissues of the parts attacked. Scarcely an element of the normal tongue could be recognised in the specimen. Upon an examination of the section, commencing at the outer border, an enormous development of the epithelium layer was seen, the fusiform character of the cells forming a strong contrast to the more granular character of the subjacent tissue. The epithelium seemed to dip down into this by long rootlets or processes, as if it had filled in fissures caused by a cracking-up of the muscular part of the organ. The granular subjacent tissue abounded in the characteristic "pearls" of cancer. Upon viewing the section under the microscope, these successive layers bear a certain resemblance to the section of a pearl, from whence they derive their name. In some of the sections he had traced, by double staining the tissue, channels of communication from one pearl to another, suggesting the possible extension of the disease by the cell division of the pearl, by which an offshoot from the original nodule had traversed the channel to a lower depth, where it had rested, and was becoming a fresh centre for the spread of the disease. If such were the mode by which the local manifestation of this disease was propagated, it was only reasonable to assume that the earlier operative measures were resorted to, the greater the chance of *arresting* its progress;

but there were germs of cancer finer than could be made evident by the microscope, and often when the surgeon had removed the more palpable effect of this disease, and the wound had healed, he could only say that he had *arrested* the malady, not cured it. Dental surgeons may often detect cancer of the tongue at such an early stage that proper surgical treatment may more effectually prevent its spreading and development in the system, and so postpone to an indefinite period that recurrence so much dreaded.

Mr. Fairlie Clarke entered at length into the diagnosis of epithelioma of the tongue, showing the importance of an early recognition, so that an operation might be performed in an early stage of the malady. Statistics proved tha tepithelioma of the tongue was one of the commonest varieties of cancer, and one of the most rapidly fatal. The rapid fatality was due to the interference with breathing and swallowing which the locality of the disease involved. Early extirpation was the only treatment of any avail, and usually prolonged the patient's life considerably.

Mr. A. T. Norton pointed out the difficulty in diagnosis which the disease in question sometimes presented. It was so closely simulated by some other varieties of tumours and ulcers of the tongue, that even the most experienced surgeons hesitated to pronounce an opinion.

Mr. R. Ranger exhibited an ancient New Zealand skull, showing a remarkable displacement of the lower molars. These teeth had apparently been forced slowly from their sockets, until they lay horizontally over the alveoli, and in this position mastication, or some friction, had worn them until the pulp chambers were opened. It would seem as though the individual to whom it belonged had been wearing a bit, either as a punishment, or for some other purpose. The Ethnological Society wished to have the opinion of the members upon the specimen.

It was referred to a committee for examination and report.

A paper on "Transplanting and Replacing Teeth," by Mr. Spence Bate, was read by the Secretary. It was the narrative of several cases in which Mr. Bate had extracted decayed incisor teeth, and had planted in the empty sockets irregular teeth, whose removal was desirable. These cases had succeeded when the patients were young in several instances.

Mr. Vasey narrated John Hunter's experiments, and referred to his own writings on the subject to show that transplanting and replanting teeth was an operation rarely successful.

Mr. Coleman had performed replantation in many instances with remarkable results. In one case dealt with by Mr. Lyons the tooth was perfectly attached to the alveolus, although it had been kept out of the mouth and filled. Some time after the stopping came out, and the dentine was sensitive, proving that the vitality of the tooth was maintained.

The Society adjourned until the first Monday in May, when a paper on "Dentigerous Tumours of the Jaws" will be read by Mr. Thos. Bryant.

HOSPITAL REPORTS.

DENTAL DISPENSARY, OCTAGON, PLYMOUTH.

Physician.—C. ALBERT HINGSTON, Esq. M.D., Lond.

Surgeons.—CHRISTOPHER BULTEEL, Esq., F.R.C.S. (Surgeon to the Royal Albert Hospital, Devonport); CONNELL WHIPPLE, Esq., M.R.C.S. (Surgeon to the South Devon and East Cornwall Hospital.)

Consulting Dentists.—STRATTON J. COLES, Esq.; F. A. JEWERS, Esq.

Dentists. — W. V. MOORE, Esq.; C. SPENCE BATE, Esq.; FRANCIS H. BALKWILL, Esq.

Treasurer.—ALFRED PAYNE BALKWILL, Esq.

The Dental Dispensary is establshed for the gratuitous treatment of diseases of the teeth among the poorer classes.

The dentists attend at 9 o'clock on Mondays, Wednesdays, Thursdays, and Saturdays, to stop, regulate, or extract teeth, or to adopt such other course as the necessity of the case may suggest.

Persons requiring any operations, except extraction, will be admitted upon presenting a ticket from a subscriber.

The following Report (read at the annual meeting held on the 7th of March) is presented to the subscribers for the year ending 30th September, 1873—

	1873.	1872.	1862 to 1873.
Teeth extracted	1,551	1,798	24,840
Filled with gold	17	27	2,969
,, ,, amalgam ...	128	151	
Other operations	89	185	1,997
Total ...	1,785	2,161	29,806

A Course of Lectures will be delivered during the year—On "Dental Physiology," by C. Spence Bate, Esq., F.R.S.; on "Dental Anatomy,'" by F. H. Balkwill; on "Dental Mechanics," by W. F. Moore.

Fees to Lectures: One Course, £7 7s.; Double Course, £12 12s. (required for diploma).

Fee to Dental Practice at Dispensary, £5 5s. per annum.

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DENTAL SCHOOL.

Resolutions of the Royal College of Surgeons, London :—

"That, as recommended by the Board, certificates of attendance on the practice of the Dental Dispensary, Plymouth, be recognised as qualifying for the Diploma in Dental Surgery."

"That, as recommended, the Dental Board be authorised to recognise the lectures proposed to be delivered at the Dental Dispensary, Plymouth, when satisfied of their due delivery and efficiency."

Resolution of the Plymouth Dental Dispensary—

"That pupils of any of the dental surgeons of the Plymouth Dental Dispensary, or other dentists holding a diploma of the College of Surgeons, or member of the Odontological Society, may attend the Dispensary on the day of such practitioner as may agree to accept such pupil or pupils on the payment of £1 1s. per annum to the institution."

The Treasurer in Account with the Dental Dispensary, 1872-3.

Dr.	£	*s.*	*d.*	*Cr.*	£	*s.*	*d.*
To Balance	22	11	2	By Rent, Attendance, and Firing	7	11	0
,, Subscriptions ...	7	17	6	,, Instruments ...	3	8	3
,, Donations	0	6	8½	,, Printing & Advertising	0	16	6
,, Interest on Balance of £22/11/2 at 3½ per ct.	0	15	9	,, Medicine	0	6	6
				,, Collector's Commission	0	7	6
	£31	11	1½	Balance ...	19	1	4½
To Balance	19	1	4½		£31	11	1½

Audited and found correct,
F. H. BALKWILL.
31*st December*, 1873.

ALFRED PAYNE BALKWILL,
Treasurer.

DENTAL HOSPITAL OF LONDON.

CASES TREATED FROM MARCH 1st TO 31st, 1874.

Extractions : Children under 14	387
Adults	468
Under nitrous oxide	219
Gold stoppings	97
White foil ditto	83
Plastic ditto	156
Irregularities of the teeth treated surgically and mechanically	42
Miscellaneous cases	265
Advice cases	26
Total	1,743

ASHLEY GIBBINGS, *House-Surgeon.*

To Correspondents.

ALL communications intended for the Editor should be addressed to the care of Messrs. SMITH, ELDER, & Co., 15 Waterloo Place, Pall Mall.

All inquiries respecting Advertisements and Subscriptions should be sent to Mr. GEORGE BUTCHER, 4, Crane Court, Fleet Street, E.C.

THE MONTHLY REVIEW
OF
DENTAL SURGERY.

No. XII. MAY, 1874. Vol. II.

MECHANICAL DENTISTRY.

"We trust the time is not far distant when the mere "mechanist will have no more relation with the surgeon "(for all ought to be surgeons) practising dentistry than the "trussmaker with the practitioner who superintends the "adjustment of the instrument."

Such is the aspiration of a writer in the *Medico-Chirurgical Review*, who, as a reviewer, is permitted to express a crude opinion without giving a reason for the hope that is in him

It may be safely said that out of the dentists in this country there have only been one or two who have been able to divorce the two branches of the profession, and to adhere to what they fondly imagined the surgical part of it. If we look at the profession in its two aspects we must admit that both branches run into each other in such a way that, even if some few could follow the course indicated by the reviewer, it could only be done at the expense of serious inconvenience to the public.

The purely surgical part of dentistry consists—1st. In treating diseases of the gums and adjacent structures arising from diseased teeth. The interference is then generally local, the constitutional treatment being generally—and we think wisely—left to the medical attendant of the patient. The second part may be confined to the preservation of the teeth from the inroads of disease, either by removing the part attacked, and by a process of polishing, restoring the surface as nearly as possible to its natural condition, or else by replacing the lost tissue with a substance indestructible in its nature, but wholly inefficient for the purpose unless applied by a process which, properly conducted, approaches the perfection of mechanical manipulation. Where, then, is the surgeon to call in the "mere mechanist?" When he has prepared a tooth for filling, we presume. Surgery checks disease and removes diseased tissue, but there its function stops. It may replace with living tissue the destroyed parts, but it does not supply an artificial substitute for what it has taken away. True, a man may stop teeth with greater success if he have the advantage of surgical knowledge to guide his judgment, but that only shows that surgery is needful to the mechanist, and that he is drawn towards it by the necessity of his calling, and not separated from it, as the reviewer would have it. The third phase of surgery pure and simple is the regulation of abnormally placed teeth. The proper treatment of irregularities involves a knowledge of some of the most intricate conditions of the development and growth of the jaws and teeth. Where is the separation to be made here? Only, we think, where it has always been made, between the operating-room and the work-room. Is the would-be surgeon prepared to hand his patient over to the "mere mechanist," telling him that one tooth is to be moved in one direction and one in another, and so on, and then stand by and "superintend the adjustment of the instrument?" We set aside the difficulty of finding the patient and the mechanist who would submit to this division of labour as being beside the present line of argument, although it would form an important feature in a wider examination of the question, and simply say that if the surgeon have not a knowledge of the instrument used and a power of applying it equal to the "mere mechanist" his superintendence will be of little use. Again, in the constant attention which is required—take the simplest, an abrasion of soft tissue—is the mechanist to be called in? or is the exalted surgeon to soil his fingers by using a file and a piece of glass-cloth? We think the surgeon must "superintend" his case all the way through, and be ready to make any change required. In the fourth phase of surgery we may place cleft palates. What is the surgeon to do? Order an obturator, as he would a truss—to take the reviewer's example—and superintend its adjustment. It seems to us that the man who could design the obturator and its attachments and superintend its manufacture would be the man most likely to adjust it properly.

We now come to the question of supplying artificial teeth. We know that many men have risen to eminence in the profession by their skill in this department; but if these men had in the first instance allied their mechanical ability with a knowledge of surgery, would not their success have been greater? and in the commencement of their career, would it not have been infinitely better for their patients? Are not cases continually coming under the notice of men in large practice in which, if the mere mechanist had had a surgical knowledge of his profession as well as a mechanical notion of what was required, months, and even years of suffering might have been obviated. Perhaps the surgeon superintending might have prevented such mischief. We reply and speak from experience, that the surgeon without the mechanical knowledge is equally helpless.

We suppose that the reviewer thinks that the surgeon who practises dentistry should confine himself to treating and stopping teeth, and that plugging should be the furthest step he should take in the mechanical direction. We have already shown that all the phases of dentistry require mechanical interference, and that stopping proves no exception; but how is the line to be drawn by the mechanical dentist? Is he never to excise a root?—say nothing of extracting a loose fragment—is he never to clear out a canal, plug it, and polish the surface of the root for its better preservation? is he never to remove a loose tooth which impairs the utility of an artificial case, and may be ready to drop out? or is the surgeon to do all this and then send the patient on to the "mere mechanist" for further treatment? or is he still to supply artificial teeth, and call in his mechanist from his own workroom to make the case while he superintends its adjustment?

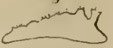
The anomalies which would follow such a jumble of distinctions are self-apparent.

The fact, as it appears to us, is that there are some gentlemen who are ashamed of the profession which has the misfortune to number them amongst its members, and would fain cover their wretched inability by an assumption of superior knowledge and refinement. It may never have fallen to their happy lot to have received the thanks of a grateful patient whom they had released from the torture inflicted by the mere mechanist, or even the mere surgeon. The mechanical bearing of the profession is something beyond their comprehension, and so they would rid themselves of the difficulty by—as they suppose—cutting it adrift, forgetting that in tooth-stopping they retain one of its most mechanical features. Perhaps also they fail to see the mechanical excellence required in that particular, and so we may make a shrewd guess as to the quality of their work.

Dentistry is the only branch of surgery which may be said truly to require being constituted a specialty, and that is because of those very mechanical technicalities which the reviewer views with such undisguised contempt. Our best men—those who are gone and those who remain—have followed the profession in this belief. By their scientific acquirements they have made themselves a name, and raised the profession to which they belong. They have never been ashamed of its mechanical part, but have brought the exact minds produced by scientific education to bear upon it, and made it a mighty blessing to humanity. Some people seem to think that the profession makes the man. We are of opinion that the man makes the profession, that mechanical and surgical dentistry are not to be separated, and that when a man is not familiar with both he is not a dentist.

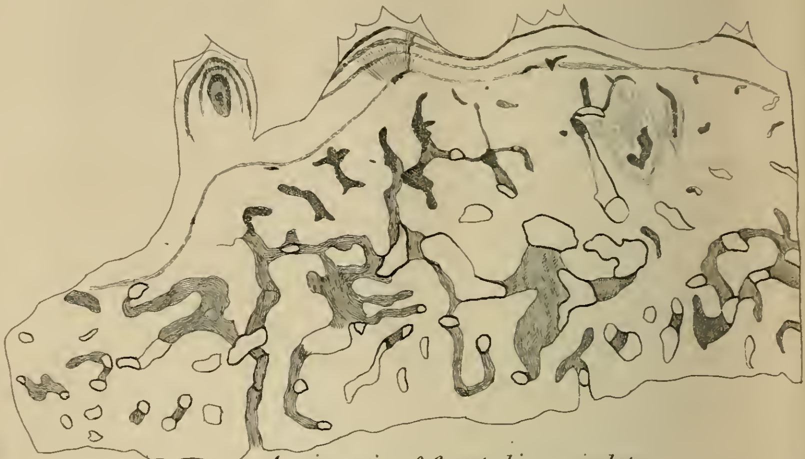
On the 17th of April Mr. Claude Rogers, late House-Surgeon to the London Dental Hospital, was presented with a handsome pair of opera and field-glasses by the students of the Hospital, as an indication of the esteem in which he was held, and an expression of their appreciation of the courtesy and ability with which he had carried out the duties of his office.

Fig XXIV



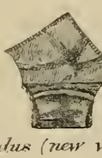
Outline of Ctenoptychius aciculatus Natural Size.

Fig XXV.



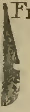
Anterior portion of Ctenoptychius aciculatus.
Magnified 20 Diameters.

Fig XXVII.



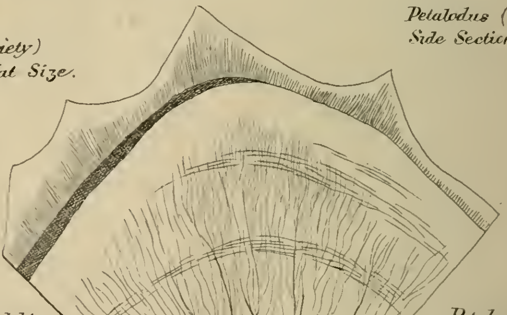
Petalodus (new variety)
Anterior Surface. Nat Size.

Fig XXVIII



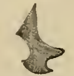
Petalodus (new variety)
Side Section. Nat Size.

Fig XXVI



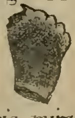
Second denticle of Ctenoptychius
aciculatus. Vertical Section.
Magnified 80 Diameters.

Fig XXIX



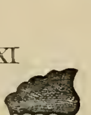
Petalodus from Staffordshire
Coal Measures Side Section
Natural Size.

Fig XXX



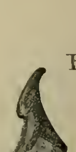
Petalodopsis mirabilis
Front view Nat Size

Fig XXXI



Petalodopsis mirabilis.
Back view. Nat Size.

Fig XXXII



Petalodopsis mirabilis.
Edge view. Nat Size.

T.Bessent, lith, 29 Essex St. Stran

ON THE

MICROSCOPICAL STRUCTURE OF FOSSIL TEETH FROM THE NORTHUMBERLAND TRUE COAL MEASURES.

By W. J. BARKAS, M.R.C.S.E., L.R.C.P., London.

[*Continued from p.* 488.]

CTENOPTYCHIUS (*continued*).

Ctenoptychius aciculatus.—The specimen I have represented in Fig. XXIV. is the only tooth of this variety that I have seen from the Coal Measures of this or any other district, and as far as I am aware, it has never been described by any other palæontologist, from which circumstance we may infer that this tooth is the first specimen that has been discovered up to the present time. In external form and minute structure it presents more points of resemblance to C. pectinatus than to any other of the numerous teeth that I have examined during these investigations. I have therefore provisionally classified it as a species of the already established genus Ctenoptychius, under the name of C. aciculatus. The specific name refers to the sharp points on the superior border of the tooth. I have never been able to observe the external characteristics of this tooth, for when it came into my hands it had been prepared for microscopical examination. I may state, however, that before being made into a section it was considered as a specimen of C. pectinatus, and the error was only discovered after the section was made and had been examined under the microscope. The section is very perfect, and shows its contour most clearly, and from it we can obtain the height and length of the tooth. It is half an inch in length, and three-twentieths of an inch in height at its highest part, which is that portion on which the first denticle is situated. The superior margin is convex in its long axis, and is denticulated; the method of denticulation is, however, very peculiar, and differs markedly from the varieties of this genus that I have already described, for the denticles decrease in size as they proceed from one extremity of the margin to the other, those in the latter half of the tooth being simply minute points. These points and denticles are beautifully tipped with from one to four points of enamel, according to their size. The first denticle is the only one distinctly separated from the margin; it is one-thirty-third of an inch in height. The inferior margin is concave. The extremities of the tooth are rather pointed, and the thicker extremity is extended slightly below the level of the other.

The minute structure of this tooth has many characters similar to those observed in C. pectinatus, more especially as regards the structure of the osteo-dentine of the base. The osteo-dentine is permeated somewhat freely with vascular canals; these canals are large in the lower portion of the base, and branch and anastomose frequently, but as they proceed towards the denticular surface they become smaller in calibre, partly decreasing on account of the branching and partly from the formation of dentinal tissue within the canal. The canals in this upper portion of the base are thus surrounded by concentric lamellæ, and they terminate at the lower margin of the unvascular dentine either abruptly, or they divide and join the neighbouring canals to form loops. The general tendency of their course is parallel to the vertical axis of the tooth and to each other. Whenever a canal gives off a branch, or an anastomosis takes place, it becomes suddenly dilated, the canal assuming its original size, or it may be that the calibre is smaller immediately beyond the junction. Fig. XXV. exhibits the arrangement of the canals in the lower portion of the base, but a power of twenty diameters is not high enough to show the mode of termination, the lamination, &c., of the canals in the upper portion, nor does that magnifying power bring into view the calcigerous tubules which spring from all the vascular canals. The tubules which arise from all parts of the canals at right angles are comparatively numerous, but do not nearly approach in number to the multitude observed in C. apicalis; they are very fine, requiring a power of 200 diameters to show them with anything like distinctness, the largest being one-twelve-thousandth of an inch at their origin; they are short, and slightly, but irregularly wavy, branch dichotomously, and the branches inosculate with each other and with the branches of neighbouring systems. The tissue in the interspaces of the canals is homogeneous in the lower portion of the base, there being no lamination around the canals nor any apparent division between the systems as was observed in C. apicalis, the tubules of one system, as I have already mentioned, uniting with the tubules of the systems next to it; in the upper portion the tissue is similar to the above, with the exception that that portion of it surrounding the canals is arranged in concentric layers, which laminæ are traversed by the calcigerous tubules. The unvascular dentine covers the whole of the denticular surface of the tooth, and is continued down its lateral surfaces. It is freely pierced by calcigerous tubules which arise from the terminal extremity of the vascular canals and from the loops; they proceed at right angles to the superficies, therefore all, with the exception of a few in the first denticle, run almost parallel to the vertical axis of the tooth. In Fig. XXVI. it will be observed that the tubules in the second denticle exhibit a tendency to spring from the terminal end of the canal at right angles; their course in this direction is, however, very short, for so soon as branches are given off, they curve and run perpendicularly to the superficies. In the first denticle the whole of the tubules arise at right angles from the canal, and proceed to the periphery without making any curve in their course; some of the tubules, therefore, are parallel to the vertical axis of the tooth, and others are at right angles; the intermediate tubules present different angles, varying from the right to the most acute. The calcigerous tubules are longer and much less wavy in their course than those in the osteo-dentine; they divide dichotomously, the branches being given off at a very acute angle; the terminal branches are exceedingly fine, and pass from the unvascular dentine directly into the enamel. These terminal branches are not visible towards the periphery of the unvascular dentine in the engraving, Fig. XXVI., for they can only be resolved by a power of 200 diameters. The branches of these tubules do not appear to inosculate, but each runs a direct course to the enamel. The tubules have very small diameters, the average measurement at their origin being from one-ten-thousandth to one-fifteen-thousandth of an inch.

The enamel is not a continuous layer of nearly uniform thickness covering the entire external surface of the unvascular dentine, as is usually observed to be the case in other teeth having a coat of this tissue, but is disposed in separate portions upon the denticles, the enamel of one denticle not being continuous with that of its neighbour, except between the second and third. Nor are these detached portions of uniform thickness, but are raised into points varying in number from one to four, according to the size of the denticle upon which it is placed. The greatest thickness of the enamel (that is at the highest point) is one-three-hundredth of an inch. It is permeated by the terminal branches of the calcigerous tubules of the unvascular dentine, and they are distinctly visible under a power of 80 diameters, Fig. XXVI. being an excellent representation. The reason of these tubules being so clearly visible under this comparatively low power, while they are not visible at all in the unvascular dentine, arises from the difference of the colour of the tissue in which they ramify, the enamel being perfectly clear and transparent, while the tubules retain the black colouring matter they possessed in the latter tissue, which is of a beautiful reddish-brown tinge, and semi-transparent.

PETALODUS.

This tooth is very rare in the True Coal Measures, but it is comparatively common in the sub-carboniferous limestone, from which all the specimens described or figured by Agassiz, Owen, McCoy, Newberry and Werthen, &c., in their respective works, have been obtained. There have been a comparatively limited number of these teeth found in our Coal Measures, one being in my own possession, and Mr. Atthey reports in the fourth volume of the "Transactions of the Northumberland and Durham Natural History Society," that he has obtained several specimens. They do not appear to be so rare in the Coal Measures of Staffordshire, however, for I have received from Mr. Ward, of Longton, four specimens of what I consider to be true Petalodi, though they were forwarded to me as Ctenoptychius apicalis, which they certainly are not. (*a*) A comparison of the side view of C. apicalis (Fig. XV.) with the side view of these Staffordshire Petalodi (Fig. XXIX.) will at once show how much they differ in external form. These two varieties of teeth resemble each other very closely in microscopical structure, as I mentioned in my last paper, and I then showed that this minute structure exactly corresponded to the minute structure of Petalodus as given by Professor Owen in his "Odontography." The external characters of these Staffordshire Petalodi can with difficulty be distinguished from those of Petalodus serratus from the sub-carboniferous limestone, and further proof of their close alliance to the genus Petalodus may be obtained by comparing Fig. XXIX. with the engravings of the teeth of that genus given by McCoy in his "British Palæozoic Fossils," and by Newberry and Werthen in the "Geological Survey of Illinois," vol. ii. (*b*)

The specimen that I have obtained from the Northumbrian Coal Measures is distinctly different from any variety of Petalodus that has been previously described.

(*a*) I have just had the opportunity of examining this gentleman's splendid collection of so-called C. apicalis, and the examination has more fully convinced me that that tooth is not Ctenoptychius at all, but Petalodus.

(*b*) Besides the Northumberland and Staffordshire Coal Fields, Carluke is the only district I have seen recorded from which Petalodus has been obtained in the Upper Coal Measures; it is mentioned under the name of P. sagittatus by Messrs. Young and Thompson in a "List of Carboniferous Fossils of the West of Scotland," published in the "Transactions of the Glasgow Geological Society."

This tooth (Fig. XXVII.) is three-fifths of an inch in height, half an inch wide at its broadest part, which is in the crown, and one-tenth of an inch thick at the base of the crown and upper portion of the root; it is distinctly divided on the anterior surface into a crown and base by a deep horizontal groove extending along the whole face. Fig. XXVIII. gives a section of the tooth and exhibits the depth of the groove. The posterior surface is perfectly flat over its whole surface, there being no division into crown and base; it is smooth, and slightly, but minutely pitted. The anterior surface of the base is convex from above downwards and slightly concave from side to side; it is smooth and glistening; the inferior margin is trenchant; the lateral borders are flat, finely reticulated, and triangular in outline, with the apex of the triangle pointing downwards; the superior margin is formed by the horizontal groove. The base is considerably smaller than the crown, being about half its height and width. The crown is much compressed, and is thickest at its inferior portion; it has five borders, which join each other at a right or an obtuse angle. The inferior border forms the upper boundary of the groove that divides the crown from the base; it is sharply defined and straight; the superior border is truncate, the apex being formed by the junction of two margins; it has a trenchant edge, which is finely but distinctly serrated; the lateral margins are triangular in shape; the base of the triangle is most inferior, this being the thickest portion of the crown; the surface is finely reticulated. The anterior surface is inclined upwards and inwards; about its centre is a shallow depression, from which radiate towards the periphery a few grooves, which are broad and very shallow. These grooves give the surface a slightly irregular appearance; the lower portion is smooth and glistening and without punctations, but the upper portion is rather rough, and slightly pitted, as though the tooth had been somewhat worn during life.

I have not ascertained the minute structure of the tooth I have just described, for this being the only specimen in my possession, I am unwilling to destroy it. If the tooth be a true Petalodus, as I am inclined to believe, from its external appearance being more nearly allied to certain species of that genus than to any other, then its microscopical characters will in all probability be similar to those of the teeth of other varieties of Petalodus, and therefore similar to the minute structure observed in Ctenoptychius apicalis (Figs. XXI. and XXII.). In order that I might be certain that the minute structure of Petalodus, as described by Professor Owen in his

"Odontography," was correct, I went a little out of my way and had prepared a vertical section of P. serratus from the mountain limestone (sub-carboniferous) in the neighbourhood of Richmond in Yorkshire. This section agreed in every particular with his description, and showed most distinctly the great similarity of structure in P. serratus, Ctenoptychius apicalis and the Staffordshire Petalodi. As I have already pourtrayed the minute structure of C. apicalis, it will not be necessary to give any illustrations of the microscopical characters of Petalodus.

In all future works in which the genus Petalodus may be described I am of opinion that the tooth I have delineated in Fig. XXVII. and the variety from the Staffordshire Coal Measures, Fig. XXIX. (neither of which I have specifically named as yet), will have to be added to the already rather long list of species; also that C. apicalis will have to be removed from the genus Ctenoptychius, and named Petalodus apicalis.

PETALODOPSIS.

This is a new genus that I have established *provisionally,* and is now recorded for the first time. It is founded upon two perfect teeth that I have obtained recently. I have here departed from my rule of not naming teeth that I think new, when I have only been able to examine so small a number, but I have obtained an amount of proof both of a negative and a positive character that these are really new teeth, as we shall see directly. If these two specimens are not the first that have been discovered, they must be exceedingly rare, for I cannot find any description or figure corresponding to them in any of the palæontological works that I have read; nor have I observed similar teeth nor any form resembling them (though I have looked carefully for them) in the cabinets of persons who have been industriously collecting fossil fish-teeth for years; finally, I have made a section of one cf the teeth, and the microscope has revealed a structure totally unlike that of any other fish-tooth, and I think I can safely say unlike any tooth structure to be found in labyrinthodonts, reptiles, or mammals. One specimen I submitted to a well-known palæontologist in London, who has greater opportunities for examining and comparing specimens than I have, and he is of opinion that they are decidedly new teeth, but somewhat allied to Petalodus in their external form, especially to some varieties of that genus found in America. The generic name Petalodopsis that I have given to this tooth is intended to signify that in external form it is somewhat similar to Petalodus; for a specific name I propose to add "mirabilis," on account of the extraordinary arrangement of the calcigerous tubules. The generic name I have adopted will also show that the teeth belong to a Cestraciont, and the fact that the two teeth were found on separate pieces of shale unaccompanied by any other remains, such as scales, head-bones, &c., also tends to prove their Selachian nature.

Petalodopsis mirabilis presents externally some rather peculiar characteristics; it is two-fifths of an inch in height, about the same dimensions from side to side at the broadest part, which is near the superior border, and three-tenths of an inch in thickness at the lower portion of the base. The tooth presents two portions, a crown and a base, which are only distinctly separated on the posterior surface; I shall not therefore, describe them separately, but take the tooth as a whole. The anterior surface (Fig. XXX.) is somewhat triangular in shape, with the apex pointing downwards; it is concave from above downwards, the concavity being most pronounced near the lower border of the tooth, where the apex of the triangle is bent forwards rather abruptly; the upper portion of this surface is smooth, shining, and minutely pitted; the lower portion is irregularly pitted, the depressions being comparatively large; the raised portions round the pits give this part of the surface a coarsely reticulated as well as pitted appearance. The posterior surface (Fig. XXXI.) is divided into a crown and a base; the crown is convex from above downwards and slightly so from side to side, the vertical convexity being most marked where the crown rises from the base; the surface is smooth, shining, and covered with minute pores; the base is concave vertically, and convex from side to side; it is rough from the large punctations and the coarse reticulation; this surface of the base is triangular, and the apex is pointed downwards and curved backwards, giving the base the appearance in a side view (Fig. XXXII.) of a heel, or process protruded from the back of the tooth proper, as in the teeth of Janassa, but in this case a bony mass unites the projecting anterior and posterior points, and makes the whole a solid osseous base. The superior border is convex from side to side, and ends at one extremity very suddenly, as though a portion had been broken away, which is not the case, this being a genuine character of the tooth; there are five denticles on this margin, those on the most rounded portion being the best defined; the denticles resemble broad flattened tubercles with a smooth and shining surface.

Correction.—In my paper on C. pectinatus read Fig. XVIII. instead of Fig. XVII., and Fig. XIX. instead of Fig. XVIII.

COHESIVE GOLD versus AMALGAM.

By GASCOIGNE PALMER, L.D.S., CHELTENHAM.

Mr. Fletcher has added one more paper to his three previous ones, in all of which he places Amalgam before Cohesive Gold.

I think that all that take any interest in the matter—and it is a matter worth taking an interest in—should read all his papers on the subject. One was published in the February number of the *British Journal of Dental Science*, one in March, and one in the April number of the same journal. I wrote a paper on the subject in the March number of the *Dental Review*, and he writes one in the April number of that journal. I hope that all those that have not read his papers will do so. But in case they have not the opportunity of doing this, I will review the chief points contained in them.

In the first paper Mr. Fletcher tells us of the great trouble he took to make a moisture-tight plug with adhesive gold, and how—no matter what kind of gold he used—he could not succeed; and he then goes on to say that others he spoke to about his failures told him they would make moisture-tight plugs for him, and then they did not do so. From these facts he argues that moisture-tight plugs on the cohesive principle are impossible.

In his third paper he tells us that he has had an adhesive gold plug sent to him which is moisture-tight; and in the fourth paper he tells us that he has had thirty-six cohesive plugs sent him to test, and that five of these are moisture-tight; and he finishes his fourth paper thus: "In the face of the proofs and tests given further correspondence is a waste of time."

Supposing his tests are of any practical value, what do we gain by his papers? In the first place, on his own showing, that he is unable to make a moisture-tight cohesive gold plug, and that that which he is unable to do someone else can do, bearing out the view that I took of the subject in my paper of March last, that a cohesive gold plug was a possibility.

Mr. Fletcher begins his first paper by telling us "That though adhesive and sponge gold are easy to work, they do not give permanent results." And in his last paper he tells us that one operator who sent two moisture-tight plugs, wrote, "That if adhesive gold was to be used at all, it must be with excessive care, even in the hands of those most experienced in its use." He also tells us in the same paper "that one of the plugs that were moisture-tight, the one that would bear the most critical inspection, weighed about three or four grains, took two hours to pack and finish," and he adds his opinion that the operator had been well employed the whole of his time. Now, this is rather different from his statement that adhesive gold was easy to work.

In my paper on "Extra Cohesive Foil" I put forward at the commencement a paragraph in the *Cosmos* advertisement of the Globe Foil, and asked Mr. Fletcher if he was prepared to state that he fully understood how to use and take advantage of extra cohesive foil; he does not answer this question, nor give any reason for not answering it, but merely wishes to know if I have tried his tests. My answer to this is, I have not, and I have no intention at present of doing so. My reasons for not doing so I will give. This is a question between Cohesive Gold and Amalgam, therefore it would be necessary to test the one against the other; nothing is to be gained by testing one alone. Secondly, the test should be made in similar cavities, and at the expiration of six months from the date of filling the teeth, being kept in one position the whole of that time in order to permit the mercury to percolate through the amalgam, a thing I feel fairly convinced it does do. Witness, for instance, a bicuspid tooth, stopped with amalgam, either on the mesial or distal surface, where, supposing the tooth to have been carefully stopped, you generally find caries going on, at the cervical margin if it be an upper tooth, at the crown if it be a lower one. Thirdly, the right place to test a plug is the mouth; and though I am just as careful in preparing a tooth for amalgam as for gold, my gold plugs last a deal the longest, and, as far as I am able to judge, so do every dentist's who knows anything of gold plugging. I am quite prepared to admit that this may have something to do with gold being the most suitable metal for the arrest of the electro-chemical decomposition which forms one of the features of decay, but this is not sufficient to my mind for the great superiority that gold as an arrestor of caries has over amalgam.

Again, Mr. Fletcher seems of opinion that the force that would be necessary to make his glass tube, glass dust would be such as, were he a patient of mine, he would not submit to. Let me suggest that glass will bear an immense pressure, equally and gradually applied, but that at the same time a slight live blow will chip it, and when you come to give from thirty to forty of these per minute, and go on at this for at least thirty minutes, you get nearly 1,000 blows, which, as I stated in my last paper, would, I think, make dust of most glass tubes, especially so when nearly all of the blows are given at the edge.

Another great objection to Mr. Fletcher's test for gold in a glass tube is that, according to my reading of his first paper, the tube is not filled to the top. Now, it seems to me that, supposing a plug of gold is not quite solid all the way down, if it is hermetically sealed against the edges of the cavity no moisture can get in. Mr. Fletcher states his opinion that if a plug be moisture-tight it is safe for ever; here I do not at all agree with him: it is quite certain that a perfectly sound and healthy tooth is moisture-tight, and yet all who have had much to do with teeth must know that a perfectly sound tooth to-day may have a large amount of caries in it this day six months, and surely no dentist would venture to say that he can make a tooth better than it was before it was attacked by caries. In his other statement that it is not necessary that plugs should be moisture-tight to last, I quite agree with him, *vide* amalgam plugs. I hope before very long to contribute to the *Dental Review* some papers on cohesive plugging, and if in these I can make it easier to many to produce moisture-tight cohesive plugs in the mouth I shall feel that I have been well repaid for any trouble I may take in the matter.

THE SURGERY OF THE MOUTH.

BY FRANCIS MASON, F.R.C.S.,

SENIOR ASSISTANT-SURGEON AND LECTURER ON ANATOMY AT ST. THOMAS'S HOSPITAL.

(*Continued from page* 498.)

B.—ACCUMULATION OF FLUID OF VARIOUS KINDS IN THE ANTRUM.

It will be readily understood, from what has been stated in the foregoing chapter, that there is much difficulty in arriving at an accurate diagnosis in many cases of distension of the antrum. Especial reference has been made to cystic disease of that part, and, as already mentioned, a distinction should be drawn between that disease and the mere accumulation of fluid of various degrees of consistency within the cavity of the antrum now about to be described.

I. DROPSY OF THE ANTRUM (HYDROPS ANTRI).

This cannot with propriety be called a common disease, if we may judge from the few cases that are placed on record. I imagine that its rarity is to be found in the fact that being a comparatively painless affection, patients do not seek advice until either the collection of fluid causes extraordinary disfigurement, or the incidental discomfort compels them to apply for relief. It would be easy to prove that suppuration within the antrum is relatively a common affection, but it should be borne in mind that prior to suppuration the case might have been one of simple dropsy of the antrum. Be that as it may, it has not fallen to my lot to see many cases of absolute and undisputed "dropsy of the antrum," and inasmuch as there are but few cases reported during the past twenty-five years, we may fairly assume that either the disease is so common as to be beneath notice, or that it is in reality very seldom actually met with. I venture to believe that the latter position is the correct one.

The symptoms may be thus described: The patient will first notice a sense of weight or fulness in the region of the antrum. As a rule there is but little acute pain, but occasionally a good deal of pain may be present, and then it is of a gnawing, dull, aching character. Amongst the first symptoms that attract the patient's attention is a gradual distension of the cheek, with some discomfort in it, and in some cases complete occlusion of the corresponding nostril. It may be here remarked that in most instances of simple accumulation of fluid in the antrum, whether of a serous or purulent kind, and provided there be no solid growth, it is the anterior wall of the cavity that commonly gives way in preference to any other, becoming by degrees thinner and thinner. There is indistinct fluctuation, and the bony flakes, owing to the wall becoming attenuated, give a crackling sensation to the surgeon not unlike that experienced in manipulating a fœtal skull on a very small scale. It is scarcely necessary to direct the reader's attention to the importance of not mistaking a thickening of the cheek for a collection of fluid in, or for a solid growth of, the antrum; but the following case may be mentioned as bearing upon this point: In April, 1874, a girl about ten years old was brought to me at St. Thomas's Hospital, with a marked swelling on the left cheek, opposite the antrum. It had been pronounced to be, and there appeared at first sight reason to believe it to be, a collection of fluid in the antrum, and the case was sent to me for operation. A careful examination, however, showed that there was nothing more than a considerable thickening of the skin and subcutaneous tissue, causing a good deal of disfigurement, but giving no pain whatever. Its origin was traced to the fact that the child had fallen from a tree about four months previously, the face coming in contact with a projecting stump of wood. The antrum was not in the least implicated. There was no cicatrix on the skin, and no evidence of injury; indeed, there was nothing present but the brawny hardness above referred to, about the size of a five-shilling piece.

The character of the fluid in hydrops antri varies. Sometimes it is clear and watery in character, and not unfrequently there is intermixed an abundance of cholesterine, either in small flakes or in largish pellets floating in or even completely filling the antrum. Again, the fluid may be glairy and viscid, resembling that which one finds inthe so-called ranula, (*a*) or in the mucous cysts situated on the inner side of the cheeks, and not unlike that ordinarily seen in the simple ganglion on the back of the wrist. With any of the foregoing conditions there may be associated a polypoid growth attached to any of the walls of the antrum.

With regard to the *treatment*, the modern plan is as effectual as it is simple. In few words, it may be said to consist in opening the antrum freely at the most prominent part of its anterior aspect from within the mouth, evacuating the fluid and introducing a strip of lint or some stimulating injection, so as to excite such inflammation as to destroy the morbid lining membrane. Subsequently the part should be syringed daily with warm water, or with a solution of Condy's fluid, or carbolic acid, according to circumstances. Another, and, as a rule, not so satisfactory a method of dealing with these cases, is to remove the first permanent molar tooth of the upper jaw, (*b*) and to perforate the antrum through the socket. (See report of case *infra*). After some experience, however, I cannot but believe that this sacrifice of a most valuable "grinder" is often entirely unnecessary. If the tooth be sound the disease is as readily and much more effectually attacked by opening the antrum in front between the malar bone and the cheek inside the mouth. This may often be accomplished with a stout scalpel; but if this be not of sufficient strength, by far the best instrument to use is a carpenter's gimlet. This simple every-day tool penetrates the bony wall with greater facility than the trocar and canula usually recommended.(*c*) Should an increase in the size of the opening be thought desirable, the cutting pliers may be used to effect this. I may say that often the aperture made is scarcely sufficient; indeed, it has been laid down as a golden rule that nothing is so perni-

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(*a*) See *Monthly Review of Dental Surgery*, November, 1872, p. 267, art. "Surgery of the Mouth."

(*b*) See *Monthly Review of Dental Surgery*, April, 1874, p. 495, art. "Surgery of the Mouth."

(*c*) Mr. Samuel Smith, of Leeds, mentions the joiner's gimlet for this purpose (*Lancet*, Feb. 14, 1857). See also Fergusson's "Practical Surgery," 5th ed., 1870, p. 595.

cious as a small opening in these cases; it should be large and free, partly to allow of the escape of morbid products, and partly to enable the surgeon to wash out the cavity, and to apply such topical remedies as he may deem necessary. The patient should be cautioned not to allow during mastication any food to get through the newly-made opening in the antrum. In order to obviate this Mr. B. Bell suggested that when eating, a plug of wood should be introduced; and Richter, who used a trocar, adds the caution not to leave the canula open.(a) At the present day Mr. Salter gives similar advice, but recommends a more convenient form of plug.

Various other methods have been suggested; thus, it has been proposed to inject the antrum through the natural opening from the nose—so-called probing, or catheterism; but the difficulty of this operation is evident; moreover, the aperture being often firmly closed, such a proceeding is obviously almost impossible. Further, some surgeons have advised the forcible breaking down of the nasal wall. Lastly, the practice of passing a knife straight through the cheek, and then entering the antrum, as recommended by Molinetti, in 1675, is what no one in these days of conservative surgery would think of advocating. To sacrifice the patient's personal appearance by dividing the external soft parts when the disease may be reached from within the mouth is palpably as unsurgical as it is unnecessary.

The following case, reported by Mr. John Greene, of Sedgley, in the *Medical Circular* for May 18, 1859, is a fair example of "Dropsy of the Antrum," and is an illustration of one mode of treatment above described—viz., of extracting a tooth and using a trocar and canula.

"Mrs. W., æt. 32, applied on March 20, 1859, to obtain my opinion about a tumour in her face that she had been told was cancer. There was in reality a large hard swelling in the superior maxilla, with constant pain of an uneasy gnawing character, depriving her of rest. Close to the orbit the bone was well defined and normal. On careful pressure at the lowest portion of the tumour the attenuated parietes of the antrum were found to give way with a crackling sound. Inside the mouth the bone was largely distended, completely filling up the cavity between the alveolar and the muscular covering. The mucous membrane was highly vascular. Several of the teeth were decayed, but not sufficient to warrant the suspicion that dental irritation was the original cause of the mischief. I proceeded to extract the first molar tooth, and introduced a trocar through its socket into the cavity of the antrum. From six drachms to an ounce of a thin yellowish fluid of an intensely bitter nauseous taste was then drawn off. Under the microscope, and even with the naked eye, it could be seen to be loaded with cholesterine, as related in other cases of this nature. The relief from pain was instantaneous. The cavity was injected with warm water. She could give no account of the original cause of the affection, not remembering ever having had a blow on the part."

(a) Velpeau's "Operative Surgery," vol. iii.

In the next paper "Suppuration in the Antrum" will be considered.

ODONTOMES.

(Traite des Tumeurs. Par Paul Broca).

ODONTOMES GENERALLY.

(*Continued from page* 452).

V. HISTORICAL.

After having made known the principal results of the researches which have led me to constitute under the name of odontomes a new group of tumours, I consider it right to indicate the facts and ideas for which I am indebted to my predecessors.

Science already possessed two orders of notions, being attached on the one side to dentified odontomes, and on the other to non-dentified odontomes. But observers not having established any reconciliation between these two categories of odontomes, whose kindred they did not know, not being able to explain the formation of the first, nor being able to imagine the evolution of the others, were only able to give an insufficient description.

I shall speak first of dentified odontomes. I have found many clear descriptions among authors of the eighteenth century. The most ancient was published by Fauchard in a chapter entitled, "Three Observations upon the Stony Growths formed either on the Teeth or in their Neighbourhood." (*a*)

I have already noticed this fact in reference to the etiology of odontomes. Here is a brief account:—A child of four years of age, falling from a horse, made a contusion on the lower jaw, left side. An abscess formed at this spot, and soon cicatrised without other complication. At the age of seven years a hard indolent tumour was gradually developed upon the corresponding

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(*a*) Fauchard, *Le Chirurgien-Dentiste*, 2^e éd., Paris, 1786. In 12, t. 1., p. 397. La première éd. est de 1728.

side of the maxillary. This tumour continued to grow, though an endeavour was made to arrest its progress by removing several adjacent teeth, without producing any amelioration. No complication arose until sixteen years were reached, at which time an abscess formed at the posterior part of the tumour. This abscess opened into the mouth and did not cicatrise. At the same time the cheek became the seat of an inflammatory tumefaction, upon which was made first an incision, then a second, then a crucial incision, followed by several cauterizations with the hot iron. The patient, tired of this treatment, which lasted eighteen months, and which only aggravated his position, took leave of his surgeon, but five years later went to Carméline, the dentist, who found in the mouth an immense tumour, hard, irregular, and slightly adherent, which he extirpated without difficulty. The symptoms were promptly dissipated; but at the lower part of the cheek a hole remained which communicated with the mouth, and through which the saliva and food escaped. Fauchard showed this case in its natural size in the fourth plate of his work, where, notwithstanding the badness of the engraving, it is easy to recognise the characteristics of a dentified odontome, and all the details of observation confirm this retrospective diagnosis. But Fauchard could not have suspected the nature of this affection. The title *stony growth*, placed at the head of the chapter—the expression *stony body*, which is found in the text—this *petrified epulis* which figures in the explanation of the cut, cause belief that he considered the tumour as an inorganic deposit; and what seems to support this interpretation is that the third observation in the chapter really refers to an enormous mass of tartar deposited on one of the molars of a very aged woman; but at the concluding moment Fauchard again attaches another opinion: "It is not," says he, "a mass of tartar, but rather an osseous *sap* which has escaped from the substance of the bone itself by the rupture of certain osseous fibres, almost as it occurs in the formation of *exostosis*." The result of this passage is that the author, after slight hesitation, considers that the tumour is an osseous production. From that time, and up to quite a recent date, dentified odontomes have most frequently been described as exostoses of the maxillary bone. This confusion was difficult to avoid, because no proper means were possessed for recognising the dental tissues. The microscope was not much used, and chemistry was not sufficiently advanced to give decisive results. Even analysis kept up the confusion. In a case otherwise very remarkable, which was communicated by Morelot to the Royal Academy of Surgery, and which was published by Bordenave in his memoir upon "Exostoses of the

Lower Jaw,"(a) the diagnosis of an exostosis admitted by Morelot was at first contested by the commissioners of the Academy because the tumour had no continuity with the tissue of the maxillary bone. But the chemical analysis made by Tenon having established that the morbid mass was composed, like ordinary bone, of an inorganic substance, soluble in "nitric acid," and of an organic substance similar in most respects to osseous parenchyma, Bordenave admits that the tumour was "a concretion produced by an effusion of osseous juices after a disease of the teeth of the maxillary bone."

(*To be continued.*)

ABNORMAL TEETH.

By HERRMANN HALLE.

[DEUTSCHE VIERTELJAHRSSCHRIFT.]

Superfluous formation in teeth is generally of much rarer occurrence than defective formation. I will endeavour to describe a tooth with superabundant formation. It is true that this case may not be the only one of the kind, but I believe it to be sufficiently rare to be of interest to many. So far as I know, in literature there is only one similar tooth, mentioned by Tomes, and described in Fig. 103. The accompanying plate shows my preparation.

The tooth in question belonged to a girl thirteen years of age, and is the first molar of the left side of the upper jaw. The girl had a good constitution. The rest of the teeth, with the exception of the one referred to, were normal, and strongly developed. This superfluous formation was situated on the outer side of the tooth, placed in a crooked direction, and appeared to be a supplementary tooth, as between the two crowns a strip of gum was plainly seen. This supposed supernumerary tooth was very inconvenient to the girl—first, on account of its position; and secondly, on account of its irregularly formed, sharply uneven crown, which pressed against the inside of the cheek, and gave a good deal of pain during mastication. I considered it justifiable to extract this troublesome tooth, and was not a little astonished that it did not move on the forceps being applied with considerable force, supplementary teeth being generally so easy to extract. On closer inspection I discovered perfect connection with the tooth lying next it, which, being in a very carious condition, I removed at once. Immediately after extraction I examined it, and found in each tooth a pulp corresponding to the crown of the tooth, which in the supernumerary tooth ended in a fang canal; it, however, did not go to the end of the fang, but was received into the canal of the anterior fang of the molar. The structure of these attached teeth is irregular, the enamel tolerably well developed, only one place on the labial side being defective; otherwise, the thickness of the enamel-layer is varied, especially in some places, consequently the dentine is irregular. The cementum is normal. I must also mention that in the posterior fang of the molar, near the crown, I found two firmly-attached nodules of enamel of considerable size.

(a) "Mém. de l'Acad. de Chirurgie," t. v., p. 352—355, et pl. xi. Paris, 1774. In 4to.

Fig. 1.

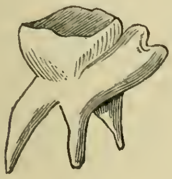

Fig. 2.

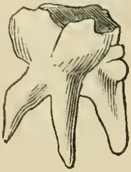

Fig. 3.

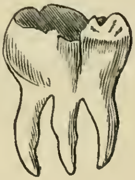

Fig. 3 shows a somewhat similar case, only with the difference that here two normal teeth are fused—namely, the second lower molar of the left side with the wisdom tooth. This tooth (Fig. 3) I extracted some years ago from a young man of about twenty years of age, who was of weakly constitution. In each of these fused teeth was a pulp cavity, both cavities, however, being connected by a fine horizontal canal. The patient informed me that the tooth was cut at the thirteenth or fourteenth year. There must have occurred here a premature formation of the wisdom tooth, otherwise the fusion with the earlier developed second molar could not have taken place. This case is similar to one shown by Professor Wedl, page 110.

APPOINTMENTS.

James Smith Turner, Esq., M.R.C.S., L.D.S., to be Dental Surgeon to the Middlesex Hospital, *vice* John Tomes, Esq., F.R.S., resigned.

S. Hamilton Cartwright, Esq., M.R.C.S., L.D.S., to be Assistant Dental Surgeon to King's College Hospital.

MELANCHOLY DEATH OF A LADY IN CARLISLE.

[The Carlisle Journal, *Friday, May 8th*, 1874.]

A lamentable accident, with a fatal result, occurred on Wednesday afternoon last, to Mrs. Walker, wife of Dr. Robert Walker, Lowther Street, in this city. The lady was troubled with toothache, and had occasionally taken chloroform to allay the pain. On the afternoon in question she complained of toothache to Dr. Walker, as he was leaving home to proceed to Longtown. Afterwards she lay down on the sofa, which she was accustomed to do after dinner, and was observed by a servant to have a handkerchief pressed to her face. Dr. Walker returned at half-past four o'clock, when to his great grief and astonishment he found his wife lying quite dead on the sofa. He tried artificial respiration, and galvanism, but in vain.

Yesterday morning an inquiry into the cause of death was held at the Police Office, before Dr. Elliot, city coroner, and a jury, of whom Mr. James Slack was foreman.

Dr. Walker, examined at his own house, said—I am hon. surgeon to the Carlisle Dispensary. The deceased Mary Walker was my wife. I left her alive and in good health and spirits at two o'clock yesterday afternnon to go to Longtown, whence I returned at about half-past four o'clock. On entering the dining-room, where I expected to find her, wishing to speak to her, I found her lying on the sofa with a handkerchief pressed closely to her face with one hand. She was lying on her back. Her mouth was full of what must have been vomited up from the stomach. Her face was livid, and the skin over her nose and mouth was slightly blistered at points here and there, effects such as chloroform may produce. I tried artificial respiration for a long time, but life was extinct. I also tried galvanism, but in vain.

Abigail Johnston said—I am cook in the service of Dr. Walker, and have been for nearly two years. I saw Mrs. Walker at two o'clock yesterday afternoon, when Dr. Walker was going out. I had no conversation with Mrs. Walker, who did not speak to me. There was nothing peculiar in her manner or appearance, which was just as usual, uniformly cheerful. Mrs. Walker was in good health, The last time I saw Mrs. Walker alive she was lying on the sofa in the dining-room. She lay on her back as usual, being in the habit of taking a rest on the sofa after dinner. She held a handkerchief over her face. I did not think of going to see if she breathed, though she did not move, and there was nothing particular about her to attract attention. It did not occur to me to go and take the handkerchief off her face, as I have seen her with it in the same position twice previously. I perceived no smell of chloroform in the room, but I have twice seen Mrs. Walker put a little chloroform on her handkerchief and apply it on account of the toothache. She was troubled with toothache, and I heard her complaining about it to Dr. Walker at two o'clock yesterday. Dr. Walker, when he found the deceased, sent for Dr. Sullivan and Dr. Reeves.

Elizabeth Beaty, nurse and housemaid in the service of Dr. Walker, spoke to being sent to Mr. Westray's by her mistress on an errand about two o'clock. She returned in about three minutes and gave her answer to Mrs. Walker, who then desired her to go to the children and let her have a quarter of an hour's rest. That was quite usual with her after dinner. Witness did not go back again to the room until Dr. Walker called her. She had been in Dr. Walker's service two years and a half, and had known her mistress when she had toothache use chloroform. She could recollect two occasions on which Mrs. Walker had done this. After Dr. Walker's return witness was sent to call in a doctor, and she sent Dr. Hair, Dr. Sullivan, and Dr. Reeves, and afterwards Dr. Maclaren called. During the afternoon and afterwards witness did not see her mistress.

Dr. Sullivan said—I am surgeon to the Carlisle Dispensary. Yesterday I was called by Dr. Walker's servant to go to that gentleman's house. That was between half-past four and five o'clock in the afternoon. When I arrived at the house I found Mrs. Walker lying on the floor. Dr. Walker was trying to restore her to life by rolling one side of her body on the floor and endeavouring to re-establish natural respiration. I unloosed her dress and assisted Dr. Walker to restore breathing by placing the body in various positions. A few minutes after I arrived Dr. Reeves came, then Dr. Hair, and later still Dr. Maclaren arrived. We procured a galvanic battery and applied it, but without any result. All that we did was without any effect whatever. The body was partly cold, and Mrs. Walker had been for some time dead. She might have been dead an hour, at any rate she could not have died only a minute or two before. I felt that the efforts we used were unavailing, but I thought it right to try. I drew the attention of the jury (when they viewed the body) to the condition of the nose and mouth of the deceased, which showed that an irritant had been applied. There was a small irruption. I have a strong suspicion that chloroform was used. While clinical clerk at Edinburgh Royal Infirmary I used to administer chloroform, and I have occasionally seen the same results as were visible on the nose and mouth of the deceased. There was vomited matter on the floor that had been removed from the mouth. In the case of a person lying on his or her back unconscious, and under the influence of chloroform, vomiting is almost certain death, as it stops up the windpipe. In his opinion the immediate cause of Mrs. Walker's death was suffocation by vomiting while laying on her back, and the vomiting was caused by chloroform. Being unconscious, she was unable to remove the vomited matter from her mouth, and it stopped her breathing, and thus caused her death.

The Coroner, in summing up to the jury, said—This case is one only too clear, and one of a very deeply melancholy description, viewed from many of its aspects, but there seems to be no blame whatever attaching to any one, not even to the poor deceased lady herself beyond the unguarded application of chloroform. On account of the immense, I may say indescribable, relief given by chloroform in cases of the most excruciating pain, there need be no wonder that those who have experienced its benefit might feel towards chloroform what I may call a warm side; and they might have no fear—so long as death has not occurred the idea does not enter such a person's mind, but the application of it by any one without the help of a second person is entirely to be reprehended and prohibited. This case in point is a sad example to show that no one should venture on taking chloroform in the absence of all other persons. We have it in evidence that Mrs. Walker suffered from toothache. Ladies bearing families are not always in a condition to have teeth extracted, and on this occasion Mrs. Walker appears to have taken a little chloroform vapour from a handkerchief for the purpose of relieving toothache, and at the same time to give her a little rest, which she seems to have been in the habit of taking after dinner. Up to the time of taking chloroform for that purpose, Mrs. Walker appears to have been in her usual health and spirits, and those, it has been proved, were uniformly good. After Mrs. Walker had retired to the dining-room we do not know that she was ever seen alive. The cook, Abigail Johnston, certainly did see her at three o'clock in the afternoon, but we have no evidence to show, nor have we any reason to believe, that Mrs. Walker was at that time living. I think it is much more probable that at that time Mrs. Walker was deceased. It is probable that the death took place between two and three o'clock, and probably much nearer two than three. She was not seen again until she was seen by Dr. Walker on his return from Longtown at half-past four o'clock. The most strenuous endeavours have evidently been made skilfully by a number of medical men, but in vain. Those medical gentlemen seem to have felt at the time that it was in vain, but they persevered for a length of time out of deference to Dr. Walker, who wished this to be done. There was no response on the part of nature, and there is no doubt that Mrs. Walker at that time had been dead, according to the evidence, probably much more than an hour. The evidence of Dr. Sullivan is pretty clear on this point, and his opinion as to the cause of death is equally clear and unequivocal. It is that the immediate cause of death was suffocation, brought about by the filling of the mouth, the falling back of the root of the tongue into the throat during unconsciousness produced by breathing chloroform. So that suffocation was the immediate cause of death, but that suffocation owed its presence and its action to the influence produced by chloroform breathed immediately before.

The jury held a brief consultation, and returned a verdict that death was accidental through the inadvertent use of chloroform.

The melancholy circumstances of this case have excited general sympathy in the city, its distressing features being aggravated by the fact that the unfortunate lady was *enceinte*, and expecting her confinement in a few months.

REMARKS ON THE PRODUCTION OF SLEEP DURING SURGICAL OPERATIONS.

By JOSEPH T. CLOVER, F.R.C.S.

[BRITISH MEDICAL JOURNAL.]

(Continued from page 504.)

Chloroform.—Next to nitrous oxide, I think chloroform is the least unpleasant anæsthetic to breathe. Patients who have previously taken chloroform are often unwilling to try nitrous oxide, because they have no objection at all to the former; but I have rarely found a patient who had once been put fully under the influence of ether, who was willing to inhale it again, unless it had been preceded by nitrous oxide.

Much has been said against chloroform, on account of the sickness which follows its use. I do not find it occur on an average more than once in seven or eight cases. The morphia or other preparations of opium, which are often prescribed after operations, will account for some of the cases of obstinate sickness. I admit that chloroform has more deaths to account for than ether has; but we must not forget that chloroform is much more frequently administered than ether, and that coroners' inquests are not held in countries where the practice of giving ether instead of chloroform is prevalent. Still there are greater dangers from chloroform than from ether, although I do not think them so insidious that every one who inhales it runs even an infinitesimal chance of losing his life.

The proportion of chloroform to the blood which will destroy life varies according to the species of animal, and in some slight degree according to the individual, but there is no animal that may not easily be killed by a full dose; and therefore, whatever way we give the chloroform, it must be only a reasonable precaution to endeavour to avoid reaching that dose.

I have already explained how it happens that one person whose breathing is *excessive*, whilst his pulmonary circulation is *slow*, may get as much chloroform into the blood of the pulmonary veins, from air which contains a moderate quantity of chloroform, as another person, whose breathing is *feeble* and whose pulmonary circulation is *rapid*, may get from air which contains a much larger proportion of chloroform. Therefore, in whatever way the chloroform is given, the condition of the patient's pulse, as well as his breathing, should be carefully watched all the time he is inhaling; and, when the breathing is deep or the pulse weak, the chloroform should be diminished or removed. In the administration of anæsthetics generally, but especially in giving chloroform, it is advantageous to have the stomach empty or nearly so. I like to give a teaspoonful of brandy, without water, a few minutes beforehand, but not so much as a tablespoonful. If wine be given, or if the patient must have some water with the brandy, then they should be given half-an-hour before inhaling, to allow time for their absorption. Emphysematous subjects, especially, ought to avoid inhaling after a meal, but I do not consider them bad subjects for chloroform. The majority of fatal cases have had good lungs; and, seeing that it is by free respiration that the greatest amount of chloroform enters the blood, we should expect cardiac syncope to happen less frequently in cases where the respiratory function could not be much increased by excitement. It will appear a strange opinion, but I say advisedly, that I think there would be less danger from giving chloroform to the out-patients of a consumption-hospital, than to the same number of distinguished athletes. The subjects of advanced fatty degeneration are bad subjects for any excitement or any anæsthetic, but we have no reliable means of diagnosing such a state. I believe I have given it several times when the heart was fatty. Where the disease is believed to exist, greater caution should of course be used, and it would be well to add one-sixth or one-eighth part of ether.

Modes of Administration.—According to my experience, the safest and least disagreeable way of giving chloroform is by means of an apparatus I introduced twelve years ago, which measures both the air and the chloroform which is mixed with it. It will be objected to on the ground that deaths have happened from chloroform where it has been used, and that it is liable, if seldom used, to get out of order; so that, for example, we may measure out only 700 or 800 inches of air instead of 1000. I admit this, and do not advise any one to use it at all who is not likely to use it often, or who is not disposed to give a little time to keep it in order.

I will defer making any remarks upon the fatal cases, merely mentioning, as the result of my inquiry, that I know of no case where death resulted when not more than thirty-five minims of chloroform were mixed with 1000 inches of air, and when the pulse was felt all the time the chloroform was given. I find that 32 minims per 1000 inches is quite strong enough, except where it is impossible to make the face-piece fit closely on account of the beard and moustache; but, even for such cases, I would not advise more than 34 minims. The best kind of face-piece for this and similar inhalers is one made of tin or thickish lead. The edge should be covered with leather or velvet, and further protected by a movable covering of chamois leather. This covering may be tied on with string; but the best plan is to have the edge perforated, and elastic thread passed through all round and fastened. By this means, the cap is kept in its place without the trouble of tying it, and it can be reversed and used again. It is a slight modification of Dr. Sibson's face-piece. Five or six years ago, I had an edge of the face-piece protected by an inflated air-cushion of India-rubber. Finding that these cushions collapsed, I had them filled with water, or with a little treacle, which answers the purpose of keeping the cushion air-tight. Dr. Sibson made use of India-rubber for valves, which I found liable to curl up from the effect of chloroform. I have had valves made of a disc of vulcanite, which fits over the edge of a cylinder, and is kept closed by a fine spiral spring. They act well in whatever way the face-piece is held, and seldom get out of order. A sort of tin cap, to fit over the edge of the face-piece, is an useful protection for the soft metal, when an extra face-piece is carried in the pocket.

Dr. Snow's and Sansom's inhalers are conveniently portable. Although they do not supply the vapour with so much precision as my own, they are much better than a towel or handkerchief.

Skinner's plan is a good and effective one for general practice. It requires less care in adjusting it to the face. The chloroform is supplied from time to time with a drop-bottle upon a flannel mask supported by a wire frame. An ingenious addition to this apparatus has been made by a French surgeon, by which the same hand that holds the mask can supply chloroform drop by drop to the flannel, and thus the other hand is left free to feel the pulse. The weak point of it is that, if the patient should struggle, the bottle might be displaced or broken.

I think some material might be found which would show more distinctly than flannel does the amount of chloroform which remains in it. If supplied too freely, chloroform might drop through the flannel upon the patient's face.

A towel folded and made into a cone, with an opening at the top, is a very effective plan; but if (in order to avoid removing it frequently, for the addition of chloroform) more than a drachm be supplied at first, the vapour may be given off more freely than is safe. A handkerchief or lint, folded to about six inches square, and supplied with ten or fifteen drops at a time, is, I think, a better plan.

If I did not use any special apparatus, I would fold a piece of lint into a compress, of the size of a walnut, and tie it up; then pour upon each end of it a drachm of chloroform, so as to let it penetrate the lint without wetting all the surface; then let the patient smell at it at the distance of two inches, and gradually cover my hand and the patient's face with a towel; by warming the lint with the palm of the hand, nearly the whole of the chloroform can be evaporated slowly. It is known, by its no longer feeling cold, when the compress has become nearly dry and needs to be supplied with fresh chloroform. Not more than thirty minims at a time should be added after the first charge.

Of course, the proportion of chloroform in the atmosphere breathed is, in most of these ways, modified by circumstances: *e.g.*, by the temperature of the room, and of the chloroform at the commencement; then by the amount of cold produced by evaporation of the chloroform; by the distance the chloroform is held from the mouth; by the temperature of the hand, and the manner of holding the chloroform.

The slowness with which a timid patient inhales causes so much delay, that the administrator is sometimes induced to augment the dose; and then, when consciousness is lost, the patient is very liable to get more of it than is safe. Not a few alarming cases have had no bad symptoms until fresh chloroform was supplied; and then, in from a quarter to half a minute, as soon as there has been time enough for the new atmosphere to tell its effect on the heart, syncope has taken place.

Chloroform is said to prevent the shock of an operation; and it certainly does so to a great extent. We do not find fainting so common as it was before chloroform was used; but I have often felt a weakness and irregularity, and sometimes a decided arrest of the pulse at a time when extensive incisions or injury to nerves has occurred. I think that a patient should have his pupils insensible to light, or breathe stertorously, before the commencement of a severe operation; but that one or two inspirations of pure air should be taken before the anticipated shock is given. . . . .

Mixtures of Chloroform with Other Things.—I find that four to eight minims of ether and thirty minims of chloroform with one thousand inches of air mixed in my bag, answer very well. It sometimes produces more excitement than chloroform alone, but it certainly tends to make the immediate recovery from chloroform more pleasant, and keeps up a better pulse.

The addition of a fourth part of chloroform with one of ether will make the administration of ether on a towel much easier; but, inasmuch as it must be forced upon the patient more than chloroform alone, and the patients are almost sure to struggle, I have not used it very frequently, and cannot advise it.

I have used a mixture of alcohol, one part; chloroform, two parts: ether, three parts; and like it much, for cases where moderate narcotism has to be kept up a long time—*e.g.*, when caustic chloride of zinc has been applied to a cancerous growth. I have tried, in a few cases, tetra-chloride of carbon, ethyliden chloride, and most of the other anæsthetics that have been recommended; and the conclusion at which I have arrived is, that they are neither safer nor more pleasant than ether and chloroform; and, if not decidedly superior in these respects, it is better to continue the agents we are most familiar with.

Nitrous Oxide is an anæsthetic of a very different character to the preceding. I had the pleasure of showing the use of it at the Oxford meeting. Since that time, I have given it in 6,960 cases. When successfully given, the patient appears to fall asleep without any delirium or excitement; but, if the operation be one leaving much pain behind it, the patient sometimes will have a dream more or less connected with it, and then wake up rapidly and completely. It is by far the best anæsthetic for many short operations, such as the extraction of teeth, opening abscesses or boils. It answers very well in operating for strabismus. Removal of the eyeball was performed lately by Mr. Bowman for a lady, who said she had no consciousness of the operation. It is well suited for examining hysterical cases, wrenching stiff joints, and reducing luxations of recent date. I do not think it suitable for cases where it is necessary to keep the patient quiet more than three or four minutes; but, if the patient be allowed to recover consciousness after one inhalation before another is commenced, the anæsthesia may be kept up tolerably well for half an hour. I have never kept a patient unconscious for more than between six and seven minutes; but, if quietude is not important, I have no doubt that a patient could be prevented from feeling pain for an hour. But, although this is possible, I am sure the recovery afterwards would not be satisfactory. When chloroform or ether has been given for ten or fifteen minutes, a state of anæsthesia continues for some time afterwards; but the sensibility to pain returns within two minutes of ceasing to breathe the nitrous oxide, and therefore, in such operations as tying hæmorrhoids and minor amputations, which might, from the short time they take, be thought fit cases for nitrous oxide, it would be unsatisfactory to the patient on account of the after-pain.

In administering nitrous oxide, a plentiful supply of gas is essential to success. There is no fear of patients inhaling too much at first; indeed, they should be told to breathe deeply and slowly. They often disobey the latter part of the advice, and pant as if they could not breathe too rapidly. A supplemental bag was my first contrivance for preventing air from being drawn under the face-piece, and for obviating waste of the gas in cases of this kind. I have now accomplished the same object by keeping the inspiring valve open, so that a part of the expired gas is driven back through it into the bag. I find that I can prolong the sleep of nitrous oxide during operations in the mouth by having the nose-cap and mouth-piece separate, and retaining the nose-cap in its place whilst the operation goes on. The supply of gas must be kept up freely, for, if a little air be drawn in by the mouth, the patient will soon become unsteady, if not actually sensible to pain. Gas is sometimes required where, from the inflamed state of the cheek or lips, the pressure of the face-piece could not be borne. A cap, of the size of the face, formed in front of a piece of glass, and of tin and India-rubber at the sides, answers exceedingly well, but a great deal of gas must be wasted to ensure success. It is a good plan to cover the eyes during recovery, as a bright light or any moving object may cause an unpleasant dream.

If nitrous oxide should prove fatal, I think it will happen from the occurrence of syncope from some other cause, during the inhalation. Arrested breathing would soon be remedied by artificial respiration, if the heart were beating. I have, on three occasions, been obliged to resort to this means, and the recovery in all cases was satisfactory in less than three minutes.

Nitrous oxide may be used with advantage to prepare the way for giving ether; but I would not advise it before giving chloroform; because, firstly, chloroform is not very unpleasant if given gradually, and, secondly, it would be more dangerous to give chloroform in the state of excitement from gas than without it. I have used gas preparatory for ether in two ways. 1. By means of a bag of gas, I make the patient unconscious, and then give the ether as usual: but the patients sometimes wake up enough to struggle against the ether. We should be prepared for this, otherwise the patient may remove the inhaler and remain several minutes longer in a state of excitement. 2. By using a small bag which is supplied with gas during the inhalation, and by diverting the current of gas and making the supply of gas pass over ether, as soon as the patient loses consciousness, enough ether can be got into the system this way to keep up anæsthesia for three minutes with the mouth open. It is, therefore, well suited for small operations in the mouth, such as the extraction of difficult teeth. The best time for inhaling gas is when the stomach is nearly empty. If the state of the stomach would cause nightmare in ordinary sleep, it would also in that of nitrous oxide. About once in five hundred cases, I have known the patient to pass urine whilst under gas, the explanation being, that the bladder was so full as to require a voluntary effort to retain the urine.

THE LAWS OF TRANSMISSION OF RESEMBLANCE FROM PARENTS TO THEIR CHILDREN.

BY JOHN STOCKTON HOUGH, M.D., OF PHILADELPHIA.

(*Continued from page* 523.)

ATAVISM.

ATAVISM, from *atavus*, an ancestor, is a term applied to the resemblance of a child to the grandparents or more remote ancestors rather than to its own parents. Ruckschlag in German, Pas-en-arrière in French, and Reversion in English, are synonymous terms.

Atavism is a word, like Idiosyncrasy or Catalysis, with a conventional meaning, expressive of a condition, without embodying in any degree an explanation of the cause. Indeed, no explanation of the proximate cause has ever been given, to my knowledge, though evolutionists have been satisfied in ascribing atavism to "*reversion*," which, though new, is scarcely an improvement on the ancient term, as it only means a turning back to an original condition, which would seem to indicate a deterioration or inferior degree of development, an inference manifestly incorrect.

The true cause of atavism is a *dynamic* one, just as I shall show, in a succeeding article, that "the cause of the rotation of, and nearly equal number of, sexes in births" is a dynamic one, the fœtus *in utero* impressing the mother in a *greater* and *lesser degree alternately*—one sapping the vitality of the mother in a greater degree, and the next succeeding one in a lesser degree. I cannot stop now to discuss this theory further, but must refer the reader to the article above mentioned.

Atavism, however, is usually subject to *sexual differentiation*, which fully confirms the view I have given of the proximate cause. This will be explained further on.

Atavism, then, is due to the dynamic force in one generation exhausting itself in the next, then regaining, then losing, in a series of alternations. This dynamic difference in the resultant, so to speak, of the elements uniting to form a new being, finds an explanation in the different states or conditions of development, or degrees of maturity of the ovum at the time of fecundation (the variations in the law are explained by differences in nutrition before and after fecundation).

Darwin (*a*) says: "When one parent alone displays some newly acquired and generally inheritable character, and the offspring do not inherit it, the cause may lie in the other parent having the power of prepotent transmission. But when both parents are similarly characterised, and the child does not, whatever the cause may be, inherit the character in question, but resembles its grandparents, we have one of the simplest cases of reversion. We continually see another and even more simple case of atavism, though not generally included under this head, namely, when the son more closely resembles his maternal than his paternal grandsire in some male attribute, as in peculiarity in the beard of man, the horns of the bull, the hackles or comb of the cock, or as in certain diseases necessarily confined to the male sex; for the mother cannot possess or exhibit such male attributes, yet the child has inherited them, through her blood, from his maternal grandsire."

"Atavism, or the principle of latent inheritance, is a normal phenomenon in certain forms of disease, as in colour-blindness and the hæmorrhagic diathesis, in which it

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(*a*) "Animals and Plants under Domestication," vol. ii., p. 29.

is associated with sexual limitation, and pursues for the most part a very regular course. It is well known that in these two forms of disease the order observed, both in their development and transmission, is usually complete, so that whilst the disease in each case shows itself only in the males of the first, third, and fifth generations, its transmission is effected only by the females of the second and fourth generations; and as this occurred also in my case of ichthyosis, and in other cases already noticed, the question naturally presents itself, whether in those cases in which two or more members of the same family are affected, without any evidence of the occurrence of the same disease in preceding generations, it may, notwithstanding, have occurred without being recorded." (*a*)

Sedgwick states, in opposition somewhat to M. Girou's (*b*) opinion on this subject, "that although the principle of atavism is intimately associated with that of sexual limitation, both in natural as well as in morbid development, yet it is far more common in the latter than in the former state." (*c*)

"M. Girou endeavoured to show that children naturally resembled their grandparents of the same sex, and that the transmission of this family likeness was effected through parents of the opposite sex. It is, however, quite evident that although such atavic resemblances may often be noticed, yet contrary facts can be so readily adduced as to disprove the general application of the above principle in the normal development of the human race." . . . In connection also with this subject, it may be observed that in the offspring of dissimilar parents there is never, as a rule, complete fusion of the two parents, but a distribution of the characters peculiar to each; and although this is less strongly marked in the offspring of the human race than it is in that of the lower animals—as for example in the case of some hermaphrodite insects, in which family quarterings may result from specific distinctions of sex being associated without fusion in the same specimen—yet, as regards the inheritance of disease, it will be found that the morbid characteristics of one or the other parent are either completely repeated or completely absent, but not fused together in the offspring. This is what is meant in inheritance by the doctrine of 'election,' which is based on the obser

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(*a*) Sedgwick, *op. cit.*, July, 1863, p. 186.
(*b*) "De la Génération," Paris, 1828.
(*c*) *Op. cit.*, July, 1863, p. 190.

vation that certain attributes of organization peculiar to one parent are repeated in the offspring; and it offers a reasonable explanation of the fact that children often inherit the defects of one parent, whilst in many other respects they resemble the other; and the inheritance in these cases, both natural and morbid, may sometimes be conveyed to them by atavic descent." (Sedgwick.)

Mr. Westwood observed in a specimen of the scare egger moth at Berlin, that the front part of the body and front wings were half male and half female, and the hind part and hind wings half female and half male, the characters of the male and female insect being exhibited on opposite quarters of this specimen.

Indeed, the exhibition of secondary sexual characters or peculiarities belonging to the opposite sex to that of their possessor, in animals naturally diœcious, is not without example even in the human race. We see women with beard, and men without: so also there are masculine women, possessing other peculiarities of the male, and effeminate men possessing characteristics of the female. Even where there is no apparent mixture of physical characters of one sex in an individual of the opposite sex, the mind of some men is effeminate, while that of some women is masculine.

Hence the following epigram of Martial:—

> But while thy limbs we rough and bristly find,
> Effeminate and wanton is thy mind.
>
> Lib. ii., Epigr. 36.

Also:—

> Dum dubitat natura gravis puerum faceretne puellam,
> Factus es O pulcher pene puella puer.
>
> Ausonius, Epigram 107.

Cases are not wanting in which one half of the body resembled one parent and the other half the other parent. Sibley relates the case of a young girl in Somersetshire, with hair on her head of two remarkably distinct colours; the right side from an exact parallel line which divided the skull into two equal parts was almost black; but the left side, from the same line, was of a reddish yellow. As she grew up the dark hair became jet black, exactly like that of her father; while the other side became of a strong carroty, precisely like that of her mother. The hair on all other parts of her body was diversified in the same manner. She lived to be twenty-eight years of age, and was resorted to as a great curiosity.

Another case is recorded by the same author, where the son of a white father and a negro mother had the whole of the right side white like the father, and that of the left black like the mother. Half the hair on the head was long and brown, like the father, and the other half black and woolly, like the mother.

A third case is given, where a negro man married a white woman. By her he had two sons and three daughters, who were mulattos, except the eldest son, who was the first-born. From the head to the navel, all around his body he was remarkably fair, had a fine skin, handsome round features, light-brown hair, and sanguine complexion, like his mother; but below this he was completely black, with short woolly hair, exactly like the father. (*a*)

Buffon declares that the offspring of a black man and a white woman are often pied or spotted. I remember having seen a black woman having large white patches on different parts of the body. Though I have several times seen the offspring of a white woman and coloured man, and less frequently the reverse, they presented nothing unusual.

Prof. Asa Gray (*b*) described an apple half russet and half Spitzenberg, the line of demarcation being quite distinct. Apples have also been found with one half sweet and the other half sour. This is the more remarkable from the fact that apples have five carpels, from which we would expect the divisions to be in fifths rather than halves.

Sedgwick says: "It appears to be the rule in reproduction, that the lower the position of the organised beings, the more constant is the occurrence of the principle of atavic or uninterrupted inheritance, this associated principle of sexual limitation being gradually merged into that of alternation of form, so that whilst in the higher invertebratæ there are alternations between the sexual and the virgin forms of reproduction, and in many of the lower invertebratæ between the hermaphrodite and the gemmiparous, in the corresponding alternations which occur in some of the lowest conditions of animal life the sexual element, if not altogether lost, exists in too rudimentary a form for us to recognise its presence.

"It may also be remarked, that although the occurrence of atavism in disease is usually effected through the female, yet it occurs also, though less frequenty, through the male sex. Illustrations of this are given in many cases of disease

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(*a*) *Medical Mirror*, London, 8vo, p. 95.

(*b*) *American Journal of Science and Arts*, Dec., 1872.

already cited, and among the lower animals it may often be noticed as a natural phenomenon. It is well known, for example, that the supply of milk by cows is hereditarily influenced by the bulls rather than by the cows from which they are directly descended, and that the character of the secretion, as regards both the quantity and the quality of the milk, is chiefly derived from the paternal grandmother by atavic descent, (*a*) and as we descend still lower in the scale, we find, for example, in the case of insects, evidence more or less decisive in favour of the transmission by either sex of the distinctive peculiarities of the other."

From all that has been brought forward concerning atavism or interrupted descent, it would appear as if it were quite as important, in getting the family history of an individual with the view of predicting his longevity, to inquire into the history of his grandparents, as well as that of his parents. Indeed, according to the showing of some authors cited, the facts concerning the grandparents would be much more important than those concerning the parents; yet in my experience I have not known such facts to be required by life companies, though I have often given them.

REVIEWS OF BOOKS.

The Dental Profession: a Letter to the Editor of a London Newspaper, by a Dental Surgeon. Second Edition. London: Baillière, Tindall, and Cox, King William Street, Strand. 1874.

PROFESSIONAL men do not often appeal to non-professional journals for protection. We have therefore much pleasure in welcoming a second edition of the valuable letter written by a gentleman who shows his purity of purpose by concealing his name.

The circulation which the letter has attained shows that it was needed, and even if it fail to stop those disreputable puffs (disreputable alike to the advertisers and to the periodicals which, for an increased payment, publish them) so vigorously denounced in its pages, it cannot fail to enlighten many honest-minded people whose business view of professional

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(*a*) Burdach, "Traité de Physiologie," tom. ii., p. 117, and Girou, "De la Génération," p. 127. Out of Sedgwick, *op. cit.*, p. 191-2 ; also Thierry.

matters prevents them from seeing the difference between the advertiser who relies on his own loud speaking for his reputation and the gentleman who appeals to the members of his profession and his patients for a verdict.

Only in one part do we think that the author's delicacy has led him to take a wrong view of the practitioners whom he denounces. At page 18, in speaking of the "professional knowledge necessary for dental practitioners," he says that the necessary knowledge required "is not denied even by the quacks themselves, who, by the addition to their names of letters closely resembling the initials of a recognised degree, and by the use of ambiguous language in their advertisements, endeavour to lead the public to believe they have undergone a professional education."

We cannot believe that it is any acknowledgment of, or regard for this professional knowledge that induces quacks to append fictitious titles to their names. Rather is it a readiness to profit by a desire on the part of the public generally, when seeking advice on a matter of which their own knowledge cannot be trustworthy, to have some guarantee that their adviser has certain qualifications imparted by education and recognised by authority. These astute quacks are quick to perceive this need, and in their own way to profit by it. Perhaps in the course of time our government may be "educated up" to that point, and take a lesson from the quacks. Then may these dexterous engineers be hoist by their own petard, and quacks may not have quacked in vain.

We rather tremble for the fate of the author of this letter when we read in the preface to the second edition that in the event of a future edition being called for it is his intention to publish a "complete quack directory," because he believes, on evidence, "that no quack dare attempt publicly to vindicate his character, even when unreservedly denounced by name in print," believing as we do that such men have no characters to vindicate, and having in remembrance the fate of the public-spirited proprietor of the *Pall Mall Gazette,* who, for exposing a system of quackery, had to receive an adverse verdict in an English court of justice as his reward. True, the damages were merely nominal; but morality was unsupported by the letter of the law, and the cost of a heavy law suit was but poorly repaid by the subsequent acknowledgment made to him by the medical profession.

No doubt the dentists proper would stand by the author of the letter if he followed any such course; but all the support and sympathy of his professional brethren would fail to relieve him from the worry and anxiety which might be entailed by such a course, for if one adverse verdict were given it would be the signal for an onslaught by every outraged humbug whose name might appear on the list.

Transactions of the American Dental Association, 1873.

It was our unpleasant duty to pass some severe strictures on the utterly irrelevant "loose talk" of which the last issue of the "Transactions" was partly made up (see November number of this journal), and it is with unfeigned pleasure that we observe a great improvement in this respect in the volume now before us, though we were debarred from the gratifying idea that our strictures had anything to do with the improvement manifested, inasmuch as the meeting here reported took place last August, before the appearance of our review. The volume consists of the reports of select committees, discussions, and a few voluntary contributions, not to be placed under either category. With reference to the first, it seems to be usual to delegate to some one individual the making up of a report, and on the whole the duty appears to have devolved upon those well qualified to undertake it.

In making a report upon the progress of a subject during the year, the reporter is of course not justified in excluding that with which he does not agree, and thus we find that Dr. Dean, in his report upon physiology, quotes largely from Dr. Chase, although he adds that his conclusions "lack sustaining evidence." But lest we should do the latter gentleman injustice by judging him from the extracts presented, we have carefully read his original papers, which are diffuse and of the "high falutin" style, and we think that the readers of this volume would have been quite content with less liberal extracts from them. And, again, we think that it is rather hard upon modern anatomists and physiologists, in the absence of positive certainty, to say that their theories are of no more value than the crude, ill-digested conclusions so unhesitatingly enunciated by Dr. Chase, not only without the smallest solid basis of observation to rest upon, but necessarily implying their writer's ignorance of well-known facts. Many instances of this might be adduced from his remarks on absorption; thus, he appears never to have heard of the absorption of an ivory peg inserted in a bone; and he speaks of pressure upon the enamel causing its necrosis by arresting the circulation of blood-plasma in its basal structure. We are not aware of any basal structure in enamel through which blood-plasma could circulate, nor do we know of any evidence of circulation in it. Dr. Chase's papers exemplify the worst feature in American periodical dental literature, namely, theorising diffuseness, and much tall talk, after sifting out which no solid residuum of fact or observation remains.

Of a very different stamp is Dr. Judd's report on pathology; it is devoted mainly to the parasitic theory of disease, which of course has much interest to the dentist, in consequence of the recent revival of the fungoid theory of dental caries. Dr. Judd, however, by no means confines himself to this aspect of the theory alone, but gives an able survey of the present state of knowledge on the presence of parasitic bodies in the organism at large as a cause of constitutional derangement, and also of Cohnheim's researches on inflammation. The report not only shows its author's thorough knowledge of the most recent work on the subject, but also his capability of making a good digest within a small limit of space. But why append to an admirable and concise paper, of which not one sentence can fairly be considered superfluous, two whole pages of utter nonsense from the mouth of Dr. Atkinson, under the heading of discussion?

Then follows another excellent report upon dental histology and microscopy from the pen of Dr. Hitchcock, which is illustrated by nine photographs of microscopic objects which have been reproduced by the heliotype process. This report is very concise and to the point; indeed, it would have borne expansion without in any way becoming open to the charge of writing for writing's sake; its author, like Dr. Judd, has something worth hearing to tell, and he tells it well and concisely; and we may congratulate the association upon their choice having fallen upon Dr. Hitchcock as their reporter.

Next follows a long essay upon histology and microscopy by the arch-offender, Dr. Atkinson. Dr. Hitchcock's report, full of matter, occupies six pages; Dr. Atkinson's, from which we failed to gather a single idea, eighteen pages.

Of histology it tells us nothing, save the derivation of the word; of microscopy, nothing, save the exceedingly original statement that the microscope is a modern invention (on the second of the eighteen pages).

Was not the subject of histology and microscopy (not limited by the word "dental") wide enough that its author must wander off into a farrago of sheer nonsense about everything, all creation included, which is, moreover, couched in language hopelessly unintelligible. If any one thinks we are writing too strongly, let them refer to page 155, where they will find all philosophy, both physical and mental, the order of creation, and a good deal more, given in a tabular form.

With Dr. Atkinson we have no concern; he is incorrigible; but surely the Publication Committee (for there is one) should have the courage to exclude from an otherwise creditable volume such matter as this. We are sure that they would carry every one with them in doing so, and really it is too bad to writers such as Dr. Judd, Dr. Hitchcock, Dr. Bogue, and Dr. Cushing, not to name others to whom no exception can be taken, to send forth their work in such sorry company.

The reports on dental literature, one from the pen of Dr. Bogue, in which he speaks out fearlessly and exposes the blemishes of periodical literature ; and one from Dr. Cushing, in which he notices new books and new editions, are both deserving of high praise.

With especial interest and gratification we have read two reports upon dental education, which augur very well for the future of dental surgery in America. Neither of the writers takes an altogether rose-coloured view of the present order of things; although it must be freely conceded that the older-existing colleges have done very much, yet they are now hardly disposed to advance with the advancing requirements of the profession, and will, unless we are greatly mistaken, find themselves outstripped and superseded by such schools as that of Harvard University and of St. Louis, where the close connection of dental surgery with surgery in general is, if not more fully recognised in theory, at all events carried out in practice. The salient points in Dr. Morgan's and Dr. Waye's essays are the advocacy of a good grounding in general anatomy and surgery for the dental surgeon, and the desirability of eventually obtaining legislative enactments to enforce the possession of a diploma upon every practitioner. We need hardly add that we cordially agree with the feelings therein expressed.

In fine, there is much that is of real value in the volume before us, and it is a marked improvement upon the "Transactions" for previous years; and if we have felt it necessary to condemn in strong terms some parts of the volume, it is from a feeling of regret at seeing good matter put forth in company with that which cannot but lead to an unfavourable view being taken of the volume as a whole; and we really hope that in future the Publication Committee will exercise a more than nominal supervision over that which goes forth under the sanction of their name, and will do for the readers the work of sifting the wheat from the chaff. And we may add that the disclaimer at the commencement of the volume, in which they state that they are not responsible for the opinions expressed by contributors, really does not exonerate them from exercising this supervision. No society with which we are acquainted does hold itself so responsible, but neither does any society hold itself bound to publish, under cover of its name, everything whatsoever—good, bad, or indifferent—which may be presented to it.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The ordinary meeting of this Society was held on Monday, May 4th, at the Dental Hospital, Leicester Square, Mr. Vasey presiding in the unavoidable absence of the President.

Mr. Sewill (Secretary) mentioned that a peculiar specimen was exhibited by the Treasurer, an Ashantee war-horn, decorated with jaws; and it illustrated to what extraordinary purposes the human jaw might be applied. There was not to be found the slightest amount of caries in the teeth.

Mr. Oakley Coles then read the following paper on "A Case of Remarkable Deformity of the Upper Jaw, associated with Malposition of the Teeth."

In November, 1872, the subject of the present notice was placed under my care. The patient, a female, aged eighteen years, presented a remarkable condition of the upper maxilla. The two sides of the palate were at one point in contact with each other, and the second bicuspids had less than the eighth of an inch space between them; in other words, the one approached the other of the opposite side of the jaw to within that distance. The deformity that existed may be best described as an exaggerated example of V-shaped maxilla.

The outline of the labial surface of the jaw is essentially V-shaped. The buccal and palatine surfaces are, in their peculiar conformation, I believe, unique. The incisors and canines are laterally compressed, the first bicuspids are *within* the range of the dental arch, whilst the second bicuspids occupy an almost symmetrical position on either side of the median line.

From a point midway between the two bicuspids on each side the molars are ranged in a line directed outwards and towards the angle of the jaw. The general arrangement of the teeth thus presents the appearance of a double triangle, the points of intersection being the first bicuspid teeth. The lower jaw (as will be seen in the woodcut) is large, and developed to a degree quite out of proportion to the upper maxilla. All the teeth, with the exception of the four upper bicuspids, are ill-developed, and indicate a strumous constitution. Between the upper and lower incisors, where the teeth were most closely approximated, there existed a space of three-eighths of an inch ($\frac{3}{8}$), the stumps of the upper molars articulating with the stumps of the lower molars.

The tonsils were enlarged, and the mucus ropy and unhealthy. The general intelligence was somewhat below the average. The inferior border of the lower jaw, instead of presenting the ordinary angle, descended in a curved line from the articular region to the mental region, thus giving a singular appearance to the face. The outline of the skull presented a similar compression to that found in the palate, though not to such a marked extent.

Treatment.—In November, 1872, I decided to extract the four upper bicuspid teeth, so as to produce absorption in the palatine region; this was done; at the same time a leather cap was made for the head, and attached to a chin-piece by elastic straps, with a view to altering the outline of the lower jaw ; in this respect a marked improvement was noticeable.

No mechanical appliance was worn in the mouth in order to widen the jaws, nor do I think that such an appliance would have increased the space in the alveolar region to a greater extent than that which has been obtained by simple absorption.

With regard to the origin of the deformity at present under our notice, it is difficult to find a satisfactory explanation. My own impression is, however, that it is due to the development of the molars acting upon the bicuspids at a date prior to their eruption, the influence of the molars over the position of the bicuspids being increased by the generally imperfect condition of the osseous tissues. As the molars have descended downwards and forwards they have driven the bicuspids inwards and forwards ; an examination of the casts of the mouth suggests this view, and I see no reason for rejecting it as an explanation of the abnormality.

Mr. Tomes then alluded to a specimen submitted to him for examination, and which he could make nothing of. The first and second lower molars were worn down and laid over on their side almost horizontally, and excessively worn in that position. The peculiarity was that the teeth, very much displaced as they were, must have had a very firm hold in the jaw, or they could not have become worn down. The lower jaw did not articulate well. The specimen was very peculiar, and he (Mr. Tomes) doubted if the lower jaw belonged to the skull.

Mr. Ranger said that the different colouring of the upper and lower portions of the skull might possibly be explained by the upper portion of the skull having been exposed to atmospherical influences, while the lower jaw was found embedded in a sort of gravelly deposit, which would give it that peculiar appearance.

Mr. Coles mentioned that he had recently examined a skull brought over from the West Coast of Africa, and in that case the whole of the teeth in the upper jaw, with the exception of the six incisors, were gone, and the jaw-bone was very evenly absorbed, so that it had apparently been removed or got rid of for some considerable period. As showing the probable existence of caries amongst the natives of the West Coast, the case was interesting.

The Secretary then read a communication from Mr. Fletcher.

Mr. Coleman said that Mr. Fletcher recently sent him some of the stopping mentioned ; and, having tried it himself, the filling appeared to be perfectly in contact with the walls of the teeth, and not to discolour the teeth. It appeared to show some indications of wear. The best amalgams were binary compounds—the union of two metals in the most favourable circumstances, as in the case of palladium and mercury, precipitate of silver and mercury, and the amalgam called Sullivan's. It therefore appeared a question whether the more complex compounds were likely to surpass in efficiency those which they might term simple binary compounds. From the trial he had made, however, he regarded this new introduction of Mr. Fletcher's as a valuable addition to amalgams for the teeth.

The Chairman mentioned that the amalgam supplied by Mr. Ash to the profession for many years was formed, he understood, of three metals, silver, tin, and a small proportion of gold.

Mr. Bryant then read a paper on " Dentigerous Cysts."

Mr. Tomes wished to know if Mr. Bryant agreed with Professor Broca, who put down the origin of almost all these solid tumours of the jaw, which were distinctly limited, to some disease in developing teeth. The ordinary fibroma of the jaw, which now and then seemed to be extremely limited, Broca attributed to disease in teeth-germs.

Mr. Coleman thought that the view taken by Mr. Bryant with regard to these so-called solid dentigerous tumours was one that he was firmly entitled to maintain. They found in connection with ordinary diseased teeth very frequently cystic tumours, and also large fibro-plastic growths, and if under certain conditions the retained tooth might give rise to a cystic tumour, it was not at all improbable that they would find in connection with retained teeth tumours of a solid nature, and which they frequently removed with diseased teeth. Mr. Bryant's paper was a very valuable one.

Mr. Barrett said it was a question in these cases whether it was important to operate, or whether it was necessary. Dentists must all have seen such cases as that described that evening ; and following out the history of such cases, they had known that they had disappeared without any operation whatever. He mentioned a case in point which had been under his hands, and concluded by remarking that as these operations were very serious, involving a considerable loss of masticating power, it became an important matter to decide whether they were necessary or not.

Mr. Bryant said he had to thank the Society for the attention with which his remarks had been received. With regard to the question put to him by Mr. Coleman and Mr. Tomes, he must state that he did not in any way coincide with Broca's remarks upon this subject, regarding all tumours as due to teeth irritation. The principal point he (the speaker) wished to draw their attention to was the advisability of interfering early in these cases, because he had often felt that it was a pity these tumours had not been dealt with at an earlier period. An immense amount of harm must be done by allowing the tumour to enlarge. With regard to Mr. Barrett's operation, he must confess that he was at a loss to understand how a natural cure could take place in misplaced teeth if they were left alone, or those projecting in an unnatural direction.

A cordial vote of thanks was accorded to Mr. Bryant for his interesting paper, and the proceedings terminated.

[It is noteworthy that Mr. Sercombe has been the first President for many years who has given the Senior Vice-President the opportunity of taking the chair at the meetings of the Society ; the occasional absence of the President affords an excellent opportunity for the members to judge of the efficiency with which the duties of Chairman will be carried out by the coming Presidents.—Ed. *M.R.*]

DENTAL STUDENTS' SOCIETY, 32 SOHO SQUARE.

ORDINARY MEETING, MARCH 9TH, 1874.

W. C. STORER BENNETT, Esq., in the Chair.

MR. CHARLES E. WHITE read the following paper upon "The Preparation of Dental Specimens for the Microscope":—

MR. CHAIRMAN AND GENTLEMEN,—My subject this evening is perhaps new to some of you, but all must know how much the microscope aids us in viewing the minuter structures of the human frame, and how needful it is for us to know, not only its use, but how to prepare specimens for ourselves; without this knowledge the study of the microscope becomes most expensive, and what perhaps is worse, much valuable material is thrown away, simply through the professor not knowing how to prepare it for microscopical investigation. It is my intention this evening to lay before you as briefly as possible the various methods of cutting and preparing sections of teeth, hoping that their simplicity will lead you to prepare some for yourselves, and I may add, that as a microscope is incomplete without objects, perhaps some of you may feel disposed to make duplicate specimens for the Society's microscope, which makes its first appearance before you this evening.

You all know the structure of a tooth too well to require me to mention it here; so without any further preface, I think I may as well at once put you on the right road for studying the minuter structures for yourselves. The implements I use for cutting sections are those which may be found in any ordinary dentist's work-room. Of course there are many ways of setting about the work, and I have heard of a very good section of a tooth being ground down on the hearth-stone, but this I am afraid must have been a very tedious operation. Another plan is to saw a slice out of the centre of a tooth and finish the section off on a wet hone, certainly an economical proceeding, because two or three sections may be cut from one tooth; but I think the best way is to grind a tooth, if a longitudinal section is required, on a moderately coarse corundum wheel, until the centre of the tooth, or any other part that may be wished for is reached, after which the freshly ground surface should be polished by being rubbed on a fine hone with plenty of pumice powder and water, finally finished off with a buff and putty powder. Care should be taken that all scratches be effaced; this can be readily ascertained by examining the surface with a small magnifying glass; such as used by watchmakers answers the purpose vecy well. When the one side is finished, the tooth should be cemented to a small square of glass; this enables you to hold the tooth more firmly while grinding down the other side, and is done by warming a little old and hard Canada balsam on the square of glass and pressing the finished side of the tooth down into it, taking care that the tooth is pressed well down upon the glass, so that the thickness of the cement will give you some guide as to the thickness of the section; leave the tooth thus prepared for a few hours, so as to allow the balsam to get perfectly hard, and then proceed to grind away the other side, until the section is very little thicker than a piece of note paper, then use the hone to grind it as thin as you wish, using as before plenty of water and pumice powder; and now care is required, for it is quite possible that a desire to obtain an extra thin section is rewarded by the partial, or perhaps total disappearance of the section. I have seen it done myself, and it made such an impression upon me that I cannot refrain from cautioning you not to be too energetic. When the section is thin enough the exposed side should be as carefully finished off with the buff as the other was; for you must remember that the slightest scratch on a microscopical specimen is magnified into a serious blemish when viewed even with a medium power. Of course a transverse section may be made in the same way, but in this case it is better to use a saw to cut out the part required, and grinding it down to the required thickness, always finishing with the hone and buff. This plan may be slightly altered, by simply cutting down the tooth as thin as possible, and polishing the two sides of the section at the same time by rubbing it between two plates of ground glass with a small quantity of pumice powder and water, taking care to finish the section by rubbing finally between older and consequently more worn-out ground glass. When cleaned from all adherent particles of *débris* the section may be dried, and at once mounted in balsam; this plan has one great advantage, as thinner sections may be cut this way than in any other.

However, returning to the first method described, the next operation to be performed is to remove the section from the glass; heat in this case must *not* be used, as it causes the section to curl up, making it perfectly useless, and I think that I may as well caution you here never to apply heat where any section is concerned, for it will invariably spoil the specimen; the best method of removing the section from the glass is to place the glass with the section downwards in a small saucer containing spirits of turpentine or benzole, which in a short time will so soften the balsam as to allow the section being slid off the glass. I say "slid," because that is the best method of removing the section, for if an attempt be made to raise it and the balsam be at all stiffer in one place than another, the chances are that the section will be broken and consequently spoilt. When it is freed from the glass, and as much adherent balsam as possible has been cleared away with your finger, in the palm of your hand moistened with chloroform, it should then be transferred to a watch-glass containing spirits of wine, in which it should be soaked, and all foreign matters brushed away with a small camel's hair brush; it is then ready for mounting. If time or other circumstances will not permit of its being mounted at once, it should be left in the watch-glass or in a bottle containing spirits of wine.

I think it would be as well before I leave the subject of section-cutting to give you a brief description of the method of preparing a section of a tooth *in sitû*. For this purpose the lower jaw of any small animal should be taken and soaked in absolute alcohol for the purpose of drawing all the water from the tissues; the alcohol should then be evaporated, and then the jaw should be placed in a solution of hard balsam and benzol, and left in soak for two or three days; it is then taken out and the benzol is allowed to evaporate, leaving the balsam in the sockets of the teeth; this should be allowed to get quite hard. I should recommend it being left for quite a fortnight, and then the sectionmay be cut in the ordinary manner, finishing between the plates of ground glass, the balsam preventing the teeth from falling from their places.

Next we come to the means of mounting specimens, and here again great care must be taken, for neatness is very essential where the operation of preparing microscopic objects is concerned. Never hurry your work; it is better to leave your section for days than to have to scramble through the work and to find afterwards that all your labour has been lost; every care must be taken that all the materials used for mounting are perfectly clean, and this maxim is the real secret of good preparations. Cleanliness must be the first object to aim at; all the rest follows. As you have more practice so you get more expert in preparing specimens. For mounting sections of teeth the best medium is Canada balsam; this requires a little practice before it can be used with certain success. A small quantity should be placed by means of a glass rod upon the slide and gently warmed; care must be taken not to allow it to get too warm or it will curl the section. As it gets warm small bubbles of air will collect upon its surface, which should be removed by means of a needle. The section should then be taken from the spirits of wine, quickly dried between blotting-paper, and transferred to the slide; then press it evenly and gently down into the balsam and place the covering glass upon it. This should also be pressed close to the section, and the slide should then be set aside to dry; when the balsam has got tolerably hard the slide should be finished off, by scraping away the superfluous balsam, which may be done with an ordinary penknife, and if wished, a further finish may be given by painting round the edge of the glass cover with Brunswick black; and last, although not least in importance, I would recommend you to label the slide, not only putting the simple name of the object, but also any peculiar feature it may exhibit; by so doing much time and trouble may be saved, for you will then be able to pick out at a glance any particular object you may wish for.

Having now traced the course of a section from the tooth to the cabinet, I think a few remarks upon the preparation of the pulp would not be misplaced.

The best tooth from which to take the pulp is a temporary canine; for some reason or other the pulps of the central and lateral incisors always appear gelatinous. Directly the tooth is extracted it should be placed in a bottle containing a mixture of glycerine and water, about half-and-half until you are ready to make use of it; to get out the pulp a line should be cut with a fine saw or file round the tooth longitudinally, and then with a pair of cutting-nippers the tooth can easily be broken in two. The pulp should then be carefully lifted away from the tooth by means of a pair of fine dissecting forceps, taking the apex of the pulp in the forceps; the extracted pulp should then be put in a colouring solution and left to soak for a short time. The best solution for this purpose is the carmine preparation recommended by Dr. Beale. Twenty-four hours' soaking in this is sufficient to stain the pulp throughout, when it may be removed from the staining fluid and well washed in distilled water, and transferred to Price's glycerine, the denser the glycerine the better. A small piece of the ordinary glass slide may now be used as a compressorium and a gentle pressure put upon it, the pressure increased a little every day; by this means the pulp will be gradually flattened out, and the distribution of the nerves well shown. When sufficiently thin the pulp may be permanently mounted in glycerine jelly and the cover cemented round with gold size.

A section of a tooth may be cut with the pulp *in sitû* by putting the tooth immediately it is extracted into a staining fluid, and leaving it in soak for some length of time; by this means the staining fluid is gradually imbibed through the small opening in the apex of the fang. After the tooth has been left to the action of the staining fluid for a sufficient time it must be decalcified; this can be done by placing it in a solution of ten drops of muriatic acid to one ounce of water; it must be left in this for about six weeks, after which the tooth can be cut with a razor.

Sections of soft tissues, either longitudinal or transverse, are always interesting objects for examination, especially those cut transversely, but require, however, a great deal of patience and perseverance before it is possible to succeed; but we must not be discouraged by any seeming difficulty, and if our attempts fail at first, they will in the end be rewarded. In the case of a tooth pulp, the method seems simple enough in description, and is this : having stained the pulp as I have before described, it is laid on a glass slab, and the sections are cut in either direction with a Valentin's knife moistened with glycerine.

It may not be amiss here just to give you a short description of the method of cutting sections of larger specimens. The tissue should be first hardened in spirit, and here I may say that it is always advisable to leave the specimen in the spirit for nearly a fortnight ; the next thing to be done is to give some support to the tissue while the sections are being cut ; this is to be done by imbedding it in stearine, or a composition of half paraffine and half white wax, which should be melted and poured into a light metal tube, or into a cone of paper, taking taking care that the diameter of the tube is about half again as great as that of the subject to be cut ; the imbedded mixture should be allowed to cool sufficiently to support the specimen when it is placed in it, and this should be held steadily until it is tolerably firm, when it should be set aside to get perfectly hard ; it is just as well to keep the part containing the subject moistened with spirits of wine. To cut the section, however, a small instrument is required (such as I have here, and which was devised by my father) ; it is merely two tubes running one within the other, known as "triplet tubing," having at the top a glass-covered stage, which serves as a guide for the cutting instrument ; at the lower end a cap is fitted for carrying a screw, by which the thickness of the section is regulated. (With this instrument sections about $\frac{1}{220}$ of an inch in the thickness can be cut.) The knife used for cutting should be moistened with spirits of wine, and the cut should be made steadily for the whole length of the blade ; a sawing motion should be carefully avoided ; the sections as they are cut should be dropped into a saucer containing alcohol and covered up until they are required for mounting, which should be done with glycerine jelly and gold size.

The carmine solution, which I mentioned as the best for staining pulps is readily made, and I think it is always best to make injections and staining fluids whenever it is possible, for you are more certain of their purity. Put into a test tube ten grains of carmine in small fragments, with half a drachm of strong liquor ammoniæ : by shaking this and with the aid of a spirit lamp the carmine is soon dissolved, the solution is then to be boiled for a few seconds and then allowed to cool ; after the lapse of a few hours much of the excess of the ammonia will have escaped ; then add two ounces of Price's glycerine and two ounces of distilled water, and mix thoroughly ; next add half an ounce of alcohol and then filter, or allow the solution to stand for some time and then pour off the clear fluid, which is to be kept for use. This solution will keep for months, but sometimes a small quantity of ammonia will escape, and carmine deposited ; this, of course, can easily be remedied by the addition of a few drops of liquor ammoniæ. Care must be taken not to have the solution too alkaline or colouring will be too dense, while, on the other hand, if the reaction of the solution be neutral, it will stain all parts alike, and the appearances from which we learn so much are not produced.

And now I want to call your attention to the value of polarised light in examining sections of teeth. Each separate part of the structure of a tooth gives a different tint, and in examining the cementum or of exostosis of it, it will prove most instructive, as every exacerbation of the inflammatory attack which produced it is marked by a different tint, and made more evident by a line of deeper colour dividing it from the preceding layer.

Among other things worthy of your attention are the various aspects the tooth presents under different conditions. If we examine a section of a tooth attacked by caries, we find the dentine blackened and the tubuli almost obliterated; the best teeth to obtain these specimens from are those in which caries is only just making its appearance, for if it is allowed to continue its powers of destruction the dentine becomes too black to allow of examination likely to bring out the various features of decay. In making these preparations care must be taken not to disturb the decayed portion of the dentine.

Globular dentine is found nearly always in honey-combed teeth, and presents somewhat the appearance of imperfectly fused globules, and is rather transparent when compared with the normal dentine. Secondary dentine, viewed with transmitted light, has very little difference in appearance to the primary, excepting that the tubuli are more decidedly curved, although following the direction of the primary. When the polariscope is used, however, the newer dentine gives a decidedly different tint, marking the different density of the matrix.

And now, gentlemen, there is evidently a field for investigation. I have tried to find out, but without success, the effect of arsenic upon the tooth-pulp, and although I have often attempted to obtain a tooth in which the pulp has been recently destroyed by arsenic I have never succeeded. I believe the question is an open one, and should advise all who have the appliances for this research to endeavour to throw light on this seemingly unknown point. And in conclusion, I should advise you all never to lose a chance whenever anything comes in your way the microscopic appearance of which you are uncertain; obtain a piece, and examine it at your first opportunity. I always carry a piece of oil-silk in my pocket, and if anything comes under my notice which I think will make an interesting object I beg a piece for microscopic work, and am very often well rewarded for my trouble; but, as I have told you before, you must not be disappointed if you do not always succeed, for failure meets every worker with the microscope, whether he be an old hand or a beginner.

HOSPITAL REPORTS.

DENTAL HOSPITAL OF LONDON.

CASES TREATED FROM APRIL 1st TO 31st, 1874.

Extractions: Children under 14	381
Adults	402
Under nitrous oxide	175
Gold stoppings	74
White foil ditto	74
Plastic ditto	121
Irregularities of the teeth treated surgically and mechanically	63
Miscellaneous cases	181
Advice cases	29
Total	1,500

ASHLEY GIBBINGS, *House-Surgeon.*

A PRIZE will be given by the Dean, Mr. Thomas Arnold Rogers, at the end of the Winter Session of 1874, for the best set of recorded cases on "The Treatment of the Exposed Dental Pulp."

Conditions.—The candidate must be a pupil at the Dental Hospital of London, and under obligation and with the full intention to present himself for examination for the Dental Diploma of the College of Surgeons. He must not hold any medical or surgical diploma on the 30th of April, 1874.

All the cases intended for competition must be commenced after the 30th of April, and completed before the 31st of July, 1874.

A report of three cases will be considered necessary for competition, but not more than six will be required.

The cases must be entered in a note-book kept at the hospital for that purpose at the time of the visit of the patient; and the house-surgeon will see each case in its various stages, and will sign the candidate's description of it at each visit in token of its accuracy. The note-book must not be removed from the hospital. Cases of pulp-preserving will have precedence of those of pulp-destroying in order of merit.

A patient whose case is intended for competition must attend once during the month of December, 1874, at the hospital; and the condition of the tooth operated on, and of the surrounding parts, shall be entered in the note-book under the supervision of the house-surgeon; or should the tooth have been lost previously, an account of the manner of its loss, and the condition of the tooth and neighbouring parts, must be entered in like manner.

DENTAL HOSPITAL BUILDING FUND.

To the Editor of the MONTHLY REVIEW OF DENTAL SURGERY.

SIR,—May I be allowed to announce through your Journal that it is our intention to close the Building Fund at the end of the month of May, and therefore it is hoped that all who are intending to contribute to it will do so without delay.—Very faithfully yours,

Brook Street, W., April 29. EDWIN SERCOMBE, *Treasurer.*

The following contributions to the Building Fund have been received since our last report:

	£	s.	d.
Amount already received	3,685	9	11
Proceeds of the Concert	93	4	0
Miss Caroline Tunno, per E. Saunders, Esq.	10	0	0
Mrs. Bonamy Power, per T. H. Harding, Esq.	5	5	0
— Gray, Esq., per E. Saunders, Esq....	2	2	0
R. Patrick, Esq., Southport, per W. F. Forsyth, Esq. ...	1	1	0
H. Marsh, Esq., per C. J. Fox, Esq.	1	1	0
R. Barnby, Esq., per W. F. Forsyth, Esq. (2nd donation) ...	0	10	6
Total	3,798	13	5

BLACKHEATH DRAMATIC CLUB.

The gentlemen composing the Blackheath Dramatic Club gave three performances at the Alexandra Rooms, Blackheath, on the evenings of the 28th, 29th, and 30th of April, on which occasions the proceeds were devoted to the funds of those most deserving charitable institutions, the Royal West Kent Dispensary and the Dental Hospital of London, 40 Leicester Square.

To all the gentlemen concerned in the arrangement and conduct of the above-noticed entertainment the grateful acknowledgment of the charities so kindly assisted is due, and we are pleased to be able to state that, notwithstanding very heavy expenses for hire of hall, stage properties, &c., the nett profits have reached the sum of £70 8s.; the moiety benefiting the funds of the Dental Hospital of London will therefore be £35.

We understand that it was through the suggestion of Dr. A. G. Medwin, of Blackheath, that the gentlemen of the club were induced to perform for the Dental Hospital of London, and we find that the introduction of a charity other than purely local has not been allowed to pass unchallenged by some of the newspapers of the neighbourhood.

LIVERPOOL DENTAL HOSPITAL.

CASES TREATED DURING MARCH.

Males		240
Females		225
Total		465
Operations performed	585	

W. J. Newman, *Hon. Sec.*

NEW INVENTIONS.

We have received from Messrs. Jamieson, of Broad Street, the following novelties:

"Dr. Dennett's Wheel Plugger."—For rapidly condensing over large surfaces, the idea is good and simple, but we fear that in many cases the use of such an instrument would be apt to cause the gold to curl up at the borders of the cavity. The instrument is made in three sizes, and, like all S. S. White's manufactures, perfect in construction and finish.

"The Pellet-maker" is a very useful little instrument for rapidly rolling up gold foil into pellets. It consists of a stem of steel the sixteenth ($\frac{1}{16}$) of an inch in diameter, and divided down the centre for about half-an-inch; into this slit the gold is inserted, and the instrument being rotated, coils the gold around itself. Care must be used not to roll too tightly, and not to remove the pellet, when finished, too roughly.

The "Snow and Lewis Socket-handle" is made especially for the adjustment of the "Snow and Lewis" pluggers. The handle is in the form of an ordinary plugger, and enables the operator to use the points either with the hand or automatic mallet.

"French's Spongoid" is an American invention for supplying the place of cotton-wool, bibulous paper, and other absorbent agents. It is prepared in sheets and in discs of different sizes, to suit the various purposes required. The sheets, properly medicated, may be used wherever it is desirable to effect an alterative, hæmostatic, antiseptic, or deodorising influence coincident with the absorption of fluids. They may also be used for the ready application of a counter-irritant or vesicant. The specimen we have received is simply an absorbant, and will be very useful in packing up close to the gum for interstitial stoppings. It is apparently composed of unsized paper pulp, dried in sheets of various thicknesses.

WE have received from Messrs. Smale, of Great Marlborough Street, an exceedingly neat little contrivance for carrying osteo-plastic stoppings after they are mixed and ready for insertion in the teeth. It consists of a square mortar-board, with a rim round two sides, made in miniature, of ivory, and attached to the dorsal surface of the thumb by means of an elastic band. The credit of inventing this really useful stopping-tray is due, we believe, to Dr. Evans, of Paris.

WE have received from the Dental Manufacturing Company, Manchester, specimens of the various pattern swivels manufactured by them. Three features only call for special comment. 1st. The screw-headed pin and nut attached for use in bone or vulcanite work, so that riveting may be avoided. 2nd. The screw-pin and platinum box (wormed) for vulcanising in the rubber, thus doing away with riveting or passing the pin into the rubber at all. 3rd. An eye with a loose collar on the stem, to which the spring can be screwed, and the danger avoided of crippling the springs, if a set of teeth are either carelessly or intentionally reversed in their position, after being connected by the springs. These swivels are all very useful modifications of the patterns commonly in use in this country, and are very well made.

To Correspondents.

ALL communications intended for the Editor should be addressed to the care of Messrs. SMITH, ELDER, & Co., 15 Waterloo Place, Pall Mall.

All inquiries respecting Advertisements and Subscriptions should be sent to Mr. GEORGE BUTCHER, 4, Crane Court, Fleet Street, E.C.